UNIVERSITY
OF MICHIGAN
OCT 21 1953
DENTISTRY
LIBRARY

JOURNAL OF DENTAL MEDICINE

Volume 8 No. 4
OCTOBER • 1953

OBJECTIVES OF THE AMERICAN ACADEMY OF DENTAL MEDICINE

(Quoted from the Constitution)

"To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

IN THIS ISSUE

OCCLUSAL EQUILIBRATION – QUO VADIS. Sidney Sorrin 129

CHAIRSIDE PATIENT EDUCATION IN PERIODONTAL DISEASE. J. Lewis Blass 136

HISTORY OF NUTRITION. Elmer V. McCollum 141

HIGHLIGHTS, SEVENTH ANNUAL MEETING 144

MEDICAL VIEWS ON ORAL PROBLEMS 149

BOOK REVIEWS 151

ACADEMY PROCEEDINGS 153

ADDRESS BY DR. ALLAN N. ARVINS UPON RECEIVING FELLOWSHIP IN THE AMERICAN ACADEMY OF DENTAL MEDICINE 154

NEW ACADEMY MEMBERS 155

ANNOUNCEMENTS 156

ANNUAL INDEX 158

THE JOURNAL OF DENTAL MEDICINE

Published by

The American Academy of Dental Medicine

Volume 8 October 1953 Number 4

Publications Committee

Irving Yudkoff, B.A., D.D.S., *Chairman*

Allan N. Arvins, D.D.S.
Morton S. Biskind, M.D.
J. Lewis Blass, Ph.G., D.D.S.
Louis R. Burman, Ph.G., B.S., A.M., D.D.S.
Julius N. Obin, B.A., D.D.S.
Hayes Martin, M.D.
Samuel Charles Miller, D.D.S.
Harry Roth, B.S., D.D.S.
Sidney Sorrin, D.D.S.

Published quarterly at New York, N. Y.

Editor—Irving Yudkoff, 755 West End Ave., New York 25, N. Y.

Consultant Editor—Allan N. Arvins

Associate Editors

J. Lewis Blass
S. Leonard Rosenthal

Assistant Editors

Marvin Okun
Arthur N. Yohai
George Witkin
Nathan Wachtel

Business Manager—Harold E. Brennan, 527 Fifth Ave., New York, N. Y.

Subscription $4.00 Yearly Single copies, $1.00

Special Nutrition Issue (Sept. 1953)—Additional Single Copies, $1.00—Special Rate in Quantity.

Publication in the Journal of Dental Medicine is not an endorsement by the American Academy of Dental Medicine of opinions in any article, abstract or extract. The Editor and Publisher are not responsible for opinions expressed by authors of contributions.

Copyright 1953 by the American Academy of Dental Medicine, Inc.

DIRECTORY OF OFFICERS

President	Alvin H. Berman, 2026 E. North Avenue, Baltimore 13, Md.
President-Elect	George F. Clarke, 10 Post Office Square, Boston 9, Mass.
Secretary	William M. Greenhut, 124 East 84th Street, N. Y. 28, N. Y.
Treasurer	George G. Stewart, 1004 Medical Arts Bldg., Philadelphia 2, Pa.
Editor	Irving Yudkoff, 755 West End Avenue, New York 25, N. Y.

CHAIRMEN OF COMMITTEES

Annual Meeting	S. Leonard Rosenthal, Philadelphia, Pa.
*Constitution	Walter I. Levine, Baltimore, Md.
*Dento-Medical Relations	Maxwell Goldenberg, Montreal, Que.
Essayists & Clinicians	Philip Edelman, Brooklyn, N. Y.
*Fellowship & Honorary Membership	George F. Clarke, Boston, Mass.
Graduate Awards	Charles E. Loveman, Baltimore, Md.
*Membership	Abraham Goldstein, Brooklyn, N. Y.
Mid-Winter Meeting	William H. Copperthwaite, Red Bank, N. J.
*Pharmaceutical	Samuel Turkenkopf, Newark, N. J.
Planning	J. Lewis Blass, New York, N. Y.
*Publications	Irving Yudkoff, New York, N. Y.
*Research	Edward C. Dobbs, Baltimore, Md.
Residency in Dental Medicine	Sidney Sorrin, New York, N. Y.
Sections	Horton D. Kimball, Detroit, Mich.
*Historian	William M. Greenhut, New York, N. Y.
*Award & Endowment	Louis J. Rosen, Montreal, Que.
Representative, Dental Information Bureau	William M. Greenhut, New York, N. Y.

DELEGATES FROM SECTIONS

Connecticut	Lester B. Weiss, New Haven, Conn.
Maryland	Irving Abramson, Baltimore, Md.
Massachusetts	George F. Clarke, Boston, Mass.
Montreal	Maxwell Goldenberg, Montreal, Canada
New Jersey	Morton DeScherer, Englewood, N. J.
New York	Reuben Fogelson, New York, N. Y.
Philadelphia	Bernard B. Saturen, Philadelphia, Pa.

PAST PRESIDENTS

Samuel Charles Miller, New York, N. Y.
Sidney Sorrin, New York N. Y.
J. Lewis Blass, New York, N. Y.
George A. Bruns, Boston, Mass.
Louis R. Burman, Bronx, N. Y.
‡Gordon R. Winter, Philadelphia, Pa.
Harold R. Gelhaar, Upper Montclair, N. J.

Section 31 of the Constitution: "The Board of Trustees shall consist of the elected officers of the Academy; the past presidents; the chairmen of the standing committees; and one delegate from each Section." (The President-Elect shall act as Chairman of the Board of Trustees.)

* In accordance with the Constitution.
‡ Deceased

OCCLUSAL EQUILIBRATION — QUO VADIS*

Sidney Sorrin, D.D.S., F.A.C.D., F.A.A.A.S., F.A.D.M.†

Almost thirty years have elapsed since we first became interested in the subject of traumatic occlusion and occlusal equilibration. It required much patience, confidence, faith and energy to help pioneer this philosophy among the dentists and periodontists. We tried to follow the excellent work started by Karolyi, R. G. Hutchinson, Stillman, McCall, Box, McLean and many others in the field of periodontia, who first advanced the theory that abnormal occlusal stresses may cause dental disease. Then followed a group of prosthodontists, including Schuyler, Sears, Swenson, among many others, who strived to convince the dental profession of the importance of "balanced occlusion" and how its knowledge would aid in solving many of our problems in dental disease. As time went by, many of the histopathologists, although skeptical at the outset, soon became interested in the relationship between traumatic occlusion and histopathology. Today, we have reached a point where it is unnecessary to convince any one of the important place occlusal equilibration occupies—but rather to teach how the fundamentals may be practiced. For years we have taught the subject to undergraduate and post-graduate students and we are happy that the work of the pioneers in this field has not been in vain. It is ironic that today, the pioneers of occlusal equilibration are required to check those who are overgrinding. As understanding of the philosophy of traumatic occlusion was reached, the profession realized that occlusal equilibration, if correctly accomplished, required less grinding than was previously supposed. Our procedures today, as they were yesterday, are always conservative, suggesting less grinding than too much, and the teaching of the preservation of as much tooth structure as possible. It was only through misunderstanding of the principles that govern occlusal grinding in the treatment of periodontal disease that it was criticized unjustly.

In correcting traumatic occlusion, an attempt is made to establish occlusal equilibration. This is the ideal arrangement of the teeth, whereby stresses on all the teeth are innocuously distributed in any position of the jaw. Occlusal equilibration may be accomplished by orthodontia, restorations, grinding or combinations of these methods. Every tooth in the jaw is mechanically arranged to tolerate normal forces. Each tooth or group of teeth is shaped to perform a definite function in masticatory processes. When the occlusal force applied is in equilibrium with the resistant forces of the periodontium, a physiologic occlusion exists. One of the most important local factors upsetting this ideal relationship is traumatic occlusion. This condition exists not only when injury has already resulted, but also when there is a possibility that injury may result. Too often, as a result of misconceptions in the theory and practice of occlusal equilibration, occlusal grinding is criticized unjustly.

In grinding the occlusion, the objective is to relieve traumatic occlusion and to establish better funcion. This is obtained in all functional relationships of the teeth by (a) eliminating premature contacts; (b) securing simultaneous contact so that the load may be distributed on as many teeth as possible.

Often a tooth which seems to be in good relation in centric occlusion is subjected to strain when the jaw moves into an eccentric position. Sooner or later it will show signs of traumatic occlusion, for it cannot alone perform functions intended for many more teeth.

TEACHING OF OCCLUSION BY MOTION PICTURES

In 1924, when the first undergraduate periodontia department and clinic was started at New York University by the author, traumatic

* Presented as a Registered Clinic at the Greater New York Dental Meeting, December 8-12, 1952.

† Associate Professor of Periodontia, New York University College of Dentistry; Periodontist, Montefiore Hospital.

occlusion was introduced as one of the important factors in the development of dental and periodontal diseases. Since that time, we have pioneered in teaching the method of occlusal equilibration by motion pictures, slides, and models.

The introduction of the use of motion pictures in the study of occlusion occurred in 1928. At this time, we inaugurated a new technique for both undergraduate and graduate teaching. Casts of a case were made, mounted on a Hanau articulator, and students under proper supervision were asked to duplicate on the casts what they had seen in the motion pictures. Since that time, we have demonstrated this type of teaching in most of the dental schools of this country, Canada, and Cuba. The lectures are augmented with large models, slides, and smaller models demonstrating equilibrated cases.

HISTOLOGIC CHANGES WHICH MAY RESULT FROM OCCLUSAL RELIEF

The following are Kronfeld's observations:—

1. Before relieving traumatic occlusion:

Ischemia, compression and necrosis of parts of the periodontal membrane; uneven width of periodontal space, ranging from excessive width to abnormally small periodontal space; resorption of alveolar bone; resorption of cementum and dentin of the root.

2. After relieving traumatic occlusion:

Regeneration of the damaged periodontal membrane (unless changes had progressed to a point past repair); resorption of the damaged tissues by osteoclasts; deposition of new bone and cementum on alveolar wall and root surface, and regeneration of principal fibers of the periodontal membrane in the damaged areas.

FUNDAMENTALS OF OCCLUSAL EQUILIBRATION

In the study of periodontal diseases, traumatic occlusion is only one of the many factors which may be responsible for the breakdown of the supporting tissues. This one factor however, is so closely related to all dental operations, that dentists are endeavoring to reach a better understanding of it and how occlusal equilibration may be satisfactorily accomplished. As already stated, occlusal equilibration means an arrangement of the teeth whereby stresses on all the teeth are innocuously distributed in any position of the jaw. By establishing this condition, prematurities are eliminated and simultaneous contact of as many teeth as possible in the various positions of the mandible, is secured. We must not only think in terms of centric relation and centric occlusion, but also of protrusive position, protrusive excursions, lateral excursions of the jaw, and free way space. In these movements and positions of the jaw, condylar guidance, incisal guidance, musculature, wear of teeth and tissue resistance play a definite role in determining procedures for correction.

Each case must be determined on its individual merits, since occlusion varies with age, due to stress and wear of the teeth. Recently the late Walter H. Wright of New York University made the statement in speaking of occlusion . . . "We as a profession are now concerned with the individual and his function, while averages and anatomic ideals are reserved for theoretical discussion. We now regard the individual with his peculiar dentition and related function as the criterion of dental treatment. . . . Each individual differs from another. It is therefore obligatory that we recognize these variations and accommodate them in order to provide functional, comfortable and health promoting dental treatment."[1]

This is important in any condition where occlusion contributes greatly to the breakdown of the periodontal structures. From the definitions of centric relation and centric occlusion, it is not necessary for these positions to coincide. In adults they are rarely in the same position and yet may be in harmony with no periodontal pathosis or temporomandibular discomfort. At times a severe discrepancy may occur and by the grinding of prematurities, periodontal pathosis and temporamandibular discomfort may be relieved.

For many years, we have been able to teach

[1] Part of a Symposium on Occlusion in Dentistry for Dean's Day, Columbia University, February 17, 1950.

fundamentals of occlusal equilibration to our undergraduate and post graduate students alike. It is difficult in a discussion of this nature, to go into the many details. However, an outline of procedure may be helpful. After casts, charting, and roentgenographic examination have been made, we examine the various movements of the jaw and note the following:—

1) Whether this is a case requiring complete mouth reconstruction because of loss of vertical dimension or other factors.

2) Whether orthodontic interference would best be advised.

3) Whether selective grinding can accomplish the desired result.

4) Whether a combination of these factors would be the best treatment planning.

If grinding is the procedure of choice, the following is considered:—

1) Preliminary Grinding: This is a procedure whereby food impactions are relieved, facets and premature wear are reduced, and esthetics and patient's biting habits are studied. We must be careful in all grinding processes, that we do not interfere with esthetics, phonetics or induce sensitiveness. We must remember that we are concerned with natural teeth and are limited with the amount of grinding which can be accomplished.

2) Our next steps in order are centric occlusion, protrusive position and excursion and lateral excursions of the jaw. When we grind for any position, we must always check to see whether we may be disturbing an equally important contact in another position of the jaw. Thus, objectives in all positions of the jaw must be clearly understood.

In natural teeth, a centric occlusion is present which may or may not be in harmony with centric relation. By means of selective grinding, using pink wax, articulating paper, patient's responses to questions as to where teeth seem to strike, visual examination, roentgenographic examination, mounted study casts, lesions on soft tissues, and sound on closure of the jaws, as guides, we reduce premature contacts which prevent correct closure in this position.

In recent years, we have employed blue or green casting wax, gage 28, to aid us in determining where prematurities are located. The wax is contoured over the teeth on left and right sides and the patient is requested to close lightly until the first point of contact is felt. The wax is then chilled and removed. Prematurities are easily discernible by holding it up to the light. The wax is then replaced on the teeth, markings made with indelible pencil through the wax, and relief instituted by grinding.

Often, we may be forced to disocclude a tooth, which requires physiologic rest. In another instance we are forced to take a tooth out of contact in one position and depend upon its contact in another excursion to prevent extrusion. We must consider the age of the patient and the position of the jaw at that age which may be relatively normal and the resistance which has been offered by the tissues. Tolerance of forces to maintain equilibrium between the applied force and resistance forces are observed in many of our cases. Often the destruction about the teeth is due to a combination of forces in all movements of the jaw, rather than to forces applied in only one movement or position of the jaw. That is why occlusal equilibration in all movements of the jaw should be the ideal.

Musculature, the temporomandibular joint and tissue resistance are important factors in guiding us as to our procedures, which should be tempered with common sense and not dogmatic hard rules. Nature in dentistry or medicine is a great aid in determining our procedures and in helping us in many of our problems. It should be given every opportunity to manifest its influence.

Many cases of completed mouth rehabilitation have caused serious temporomandibular discomfort, and loss of teeth, because Nature often rebels against the strained and unnatural changes. Judgment and complete knowledge of fundamental principles of occlusion must be uppermost in the minds of those who are recommending mouth rehabilitation which may include changes in vertical height and new guiding inclines in the other movements of the mandible.

In many cases, it is the only solution to the

problem. In other cases, orthodontia may be helpful. However, whether occlusal equilibration is accomplished by restorations, orthodontia, grinding or combination of these, fundamental principles in gaining occlusal harmony in all movements of the jaw is essential.

The following questions and answers may be of further aid in understanding occlusal equilibration.

(1) Once traumatic occlusion is relieved, does it recur? If so, why?

(1a) Once the occlusion is equilibrated, little future regrinding is necessary, unless the position of the teeth has shifted. Such shifting may be due to loss of teeth, poor restorations, pressure from erupting or impacted teeth, etc. When we relieve for traumatic occlusion, we endeavor to change the strains on teeth to stresses. In excursive movements, the planes of teeth are ground from the point of centric occlusion but never including this point—and in other positions either the cusps, incisive surfaces or opposite sulci are relieved. Thus the tooth maintains contact with the opposing tooth and will glide past its opponent with ease and with no interference.

(2) Does one ever disocclude teeth while equilibrating the occlusion?

(2a) Rarely. By disoccluding, is meant the grinding of the teeth in such a manner that they will not contact the opposing teeth in any movement of the mandible. Common sense must govern all grinding. No grinding should be done which will interfere with esthetics, phonetics or induce sensitiveness of teeth. Often we may disocclude in one position, but when this is done we must always make certain that these teeth contact in other positions. Thus, if we find it necessary in protrusive position to grind the lower incisal surfaces to obtain a better protrusive position, we may discover that a nonocclusion has occurred in centric occlusion. However, by the establishment of a good protrusive movement and position, the patient will be enabled to use the protrusive enough to prevent the teeth from continuing to extrude in centric. Conditions in other movements of the jaw may also produce similar situations.

Wherever possible, we do not encourage disoccluding of teeth. We may disocclude loose teeth temporarily in order to give physiological rest to the supporting structures. However, we expect these teeth to extrude and when they do they will be enabled to resist the normal forces intended for them; for the supporting tissues will have been sufficiently rested.

(3) Does grinding make the teeth sensitive?

(3a) Not if it is carefully done. One must be guided by the amount of the tooth structure which must be removed to secure desired results. However, in some instances, sensitiveness may occur, lasting for a short period of time and disappearing after a few days. Should it continue, formalin may be rubbed into the sensitive area.

(4) Does grinding cause cavities to develop?

(4a) No. The surfaces which are ground are smoothened. Cavities definitely do not result. On the contrary, after food impaction areas are relieved, cavities are prevented from forming.

(5) Does grinding dull the teeth?

(5a) No. As a matter of fact, by scientific grinding, we establish a relationship which causes more efficient mastication.

(6) Does grinding close the bite?

(6a) Definitely no. In grinding in centric occlusion, we merely reduce premature contacts and do not close the maxillomandibular relationship.

(7) How do you account for the fact that some teeth seem to be in traumatic relationship, yet show no evidence of periodontal disease?

(7a) Some teeth will resist abnormal stress for a long time. At the time of examination the resistance offered may be great enough so that no evidence of pathology can be observed. We have seen teeth wear down rapidly and thus delay the destructive process of the supporting structures. However, in the great majority of cases, these supporting structures eventually break down. When inclines are destroyed, and greater pressure area results, overloading occurs with resultant lesion. Often nature builds supporting bone when teeth are unduly strained

and here, also, unless relief is given, the supporting structures eventually suffer.

(8) Is spot grinding employed in equilibrating the occlusion?

(8a) Rarely. Grinding, today, is a highly scientific procedure and unless carefully planned may cause irreparable harm. Often, in spot grinding the strain removed from one tooth is transferred unwittingly to another. Unless the grinding is done with proper consideration of entire mouth equilibration, much harm may result. Exceptions to this rule may occur in an end-to-end occlusion.

(9) When incisal surfaces of lower teeth have been ground for equilibration of occlusion, do the teeth again come into contact?

(9a) It is much wiser to avoid disoccluding teeth. However, when it becomes necessary to grind the lower incisors so that a nonocclusion in centric occurs, one should always be certain that these teeth will be in contact in protrusive position. It is to be hoped that this protrusive position will be used sufficiently to prevent the teeth from continuing to erupt into centric contact.

There are certain indications for grinding lower anterior teeth. In severe cases of overbite when contact is made in centric between most of the labial enamel surfaces of the lower teeth and the lingual surface of the uppers, it may be advisable to compromise. Since the incisal edge of the lower tooth makes no contact with the lingual of the upper in this particular case, one can remove almost one-eighth of an inch of tooth structure from the incisal edges of both upper and lower teeth, if necessary, without interfering with centric contact. This procedure can be employed because centric occlusion has been established by the contact of the labial surface of the lower with the lingual surface of the upper, but, it must be understood that this method is rarely used and only in cases just mentioned. Occasionally, beveling on the incisal edge of upper and lower teeth accomplishes a good protrusive occlusion without necessarily disoccluding the teeth in centric.

Often, in extreme overbite cases, the incisal edges of the lower teeth strike the lingual marginal gingivae of the uppers. If grinding is the method decided upon, the incisal edges of the lower anterior teeth must be reduced to prevent contact with the lingual gingivae of the upper teeth. This accomplished, a correct protrusive occlusion with the upper teeth must be brought about to prevent the lower teeth from erupting into their original position. Care must be taken to ascertain whether the patient is giving a true protrusive movement. The median line may act as a guide to the operator. An extreme overbite causes overstress in the excursive movements of the mandible and, unless corrected, will induce serious periodontal disturbances.

Lower anterior teeth may be stoned where the limit of grinding on the upper teeth has been reached either because of the development of sensitiveness or because further grinding may lead to unsightliness. Although this procedure may result in a nonocclusion in centric, the expectation is that the protrusive position will be used sufficiently to prevent extrusion of the lower teeth.

(10) When interference occurs on the balancing side, what surfaces should be ground on the balancing side to give relief?

(10a) Usually the lingual plane of the buccal cusps of the lower molar. However, it is wise to consult the models, study the centric occlusion and then grind the planes of the upper or lower teeth which will least interfere with the established centric occlusion.

(11) If anterior teeth are traumatized in the eccentric positions of the jaw, how should relief be given?

(11a) Grind the lingual surfaces of the upper anterior teeth from the point of centric contact (not including the point) along the planes over which the lower teeth travel. This is done in protrusive and lateral excursions.

(12) When upper and lower posterior teeth are in premature contact in centric occlusion and there are indications that these teeth must be relieved, which teeth should be ground?

(12a) There are definite rules which guide the grinding of the teeth. It must be determined whether the sulcus will be deepened or the cusp in contact with it will be relieved. The

following points should be taken into consideration:

1.—If the cusp of the lower tooth is in abnormal stress in centric occlusion yet in harmony in the lateral excursions, it is logical to deepen the sulcus of the upper tooth. Should the cusp of the lower tooth be relieved in this condition, the lateral relation might be disturbed.

2.—If a cusp exhibits overloading in both centric occlusion and lateral excursions, it is advisable to grind the portion of the cusp of the lower tooth that is in abnormal stress. This does not imply that the tooth is disoccluded.

3.—If there is premature contact in centric occlusion and no contact in lateral excursions (both working and balancing sides), the sulcus of the opposing tooth should be deepened. If the cusp of the lower tooth were to be ground, a wider separation between the teeth in the lateral excursion of the jaw would be created.

With these corrections, pressure is equalized over the entire dentition and simultaneous stress is observed. *Once centric occlusion is established, grinding of the teeth in other excursions should be accomplished in such manner that centric occlusion will not be disturbed.*

(13) Should grinding be done without study casts?

(13a) No. The casts give us a definite relationship of the teeth in centric occlusion and show how teeth meet on the lingual surfaces. Lingual cusps of the lower teeth do not function in centric occlusion but make contacts in other excursions of the jaw—protrusive or lateral excursions. Mounting on an anatomical articulator is advised.

Casts also guide us in relieving for food impaction areas and are most helpful in giving us information which otherwise would be difficult to obtain. In addition, they serve as an accurate record of the case before treatment.

(14) What means other than grinding may be employed to equilibrate the occlusion?

(14a) Orthodontia, restorations or combinations of orthodontia, restorations and grinding.

(15) How are facets relieved by grinding?

(15a) Facets are usually relieved by grinding the facets on the lower teeth from the bottom of the facet towards the occlusal surface, thus reducing the area. In some instances, one may grind around the facet.

The reduction of facets aids in eliminating pressure area and continued abnormal wear on these teeth. The lower teeth are usually relieved without destroying the point of centric contact. This allows for better mastication since there is produced a point of cusp gliding along a plane instead of plane against plane. The smaller the area, the less force must be used to achieve the maximum function.

(16) When teeth are abnormally worn, what grinding procedures may be followed?

(16a) When teeth have been abnormally worn, there is an increase in the buccolingual and mesiodistal relationship. The occlusal anatomy is destroyed and there is more contacting surface and more pressure area. This requires greater masticatory force with lessened effect. The smaller the pressure area, the less masticatory force is necessary to produce maximum effect. When the reshaping is done, the pressure area is reduced without disocclusion and has thus produced maximum masticatory effect with minimum effort. This eliminates overloading. Leverage on the tooth has also been reduced. In some instances rebuilding is advised. In other conditions, the teeth may be covered with inlays without increasing the vertical height.

(17) Does grinding of the teeth affect the temporomandibular joint?

(17a) Incorrect grinding might be harmful and cause pain in the region of the condyle. It is interesting to note that often, after careful occlusal adjustments are employed, pain, discomfort and "clicking" sounds in the region of the temporomandibular joint disappear.

(18) Does grinding affect the pulp?

(18a) Not if it is scientifically performed. Extreme care in noting the relationship of the dentine and enamel to the pulp must be observed. The roentgenographs may guide us as to the amount of grinding which may be performed without involving the pulp. Often traumatic occlusion itself might cause pulpal symptoms, and after relief, these signs disappear.

(19) When grinding on the working side may we not change relationships previously established?

(19a) No. One must grind in this relationship from the point of centric contact (not including the point) along the planes which are interfering. Once centric occlusion is established, no grinding should be done which will interefere with this relationship. Exceptions and modifications might occur in some cases.

(20) May patients employ the so-called carborundum pastes to "grind in" the occlusion.

(20a) Carborundum paste may be employed by the patient only while he is seated in the operating chair and under the observation of the dentist. It should be used for no more than a minute or two, to relieve those high spots not completely removed by grinding. It should be used only as a finishing means and not as an actual means of grinding in a case. The employment of this paste by the patient while not under the supervision of the dentist may produce serious abnormal wear of these teeth. However, the Blass method of controlled grinding is much superior to that of uncontrolled use of carborundum paste. It protects the surfaces which we do not wish worn down—preventing abrasion of cusp points needed for the maintenance of the maxillo-mandibular relationship.

745 Fifth Avenue, New York, N. Y.

BIBLIOGRAPHY

Blass, J. L.: Controlled use of an abrasive in occlusal surface adjustments, New York J. Den. 11:262 (June) 1941.

Box, H. K.: Traumatic occlusion and traumatogenic occlusion, Oral Health 20:642-646 (Dec.) 1930.

Hirschfeld, Isador: Food impaction, J.A.D.A. 17:1504-1582 (Aug.) 1930.

Kronfeld, Rudolph: Dental Histology. Lea and Febiger. Phila., 1933-1937.

McLean, D. W.: Physiology of mastication, J.A.D.A. 27:226-231 (Feb.) 1940.

Miller, S. C.: Periodontal problems in inefficent mastication, J. 2d. Dist. D. Soc. (N.Y.) 25:399-404 (March) 1940.

Schuyler, C. H.: Correction of occlusal disharmony of the natural dentition, New York J. Den. 13:445-462 (Oct.) 1947.

———: Fundamental principles in the correction of occlusal disharmony, natural and artificial, J.A.D.A. 22: 1193-1202 (July) 1935.

Sorrin, Sidney: A comparison between grinding of occlusion of natural teeth and artificial dentures, New York J. Den. 16:345-347 (Nov.) 1946.

———: Equilibration of occlusion, Dentistry 3:288-291 (Jan.) 1943.

———: Protrusive occlusion: Periodontia Corresponding Group. Bulletin XI, 1940.

———: Common errors regarding traumatic occlusion, D. Outlook 26: 456-459 (Oct.) 1939.

———: and Miller, S. C.: Practice of Periodontia, New York, Macmillan Co., 1928.

Stillman, P. R. and McCall, J. O.: Textbook of Clinical Periodontia, ed. 2, New York, Macmillan Co., 1937.

Swenson, M. G.: Complete Dentures, ed. 2, St. Louis, C. V. Mosby Co., 1947.

ANTI-ENZYME TOOTH PASTES

Claims that the new so-called "anti-enzyme" tooth pastes will prevent dental decay are unwarranted, The Journal of the American Dental Association declared editorially recently.

"There is no acceptable evidence to date demonstrating that the daily use of such a dentifrice will prevent dental caries although studies on the subject are now being made," The Journal said.

"Dentists, of course, will wisely withhold judgment of the product until scientific evidence proves its worth or its worthlessness and it is hoped that the intelligent consumer will do likewise."

The editorial took note of the repeated claims that have been made in the past for "miracle" tooth pastes and powders, none of which has lived up to the promises made for them.

CHAIRSIDE PATIENT EDUCATION IN PERIODONTAL DISEASE

J. LEWIS BLASS, Ph.G., D.D.S., F.A.C.D., F.A.D.M.*

Motivating patients to an appreciation of the need and value of dental services is not easy, yet for bilateral satisfaction both the dentist and the patient must know the needs and values of dental care. Unfortunately, the relationship between the patient and the doctor is not always automatic: clear information must be exchanged. Motivation toward "better health" is probably the least effective form of persuasion to use. The desire for better health must be translated to the patient in terms of social acceptance or some other dominant appeal.

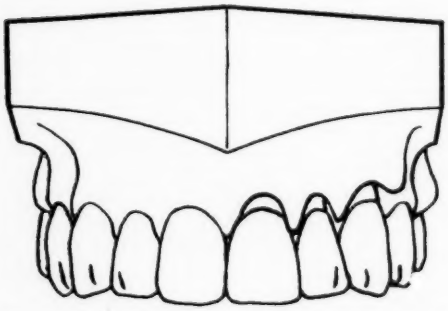


Fig. 1—The left side represents ulatrophia which has exposed a portion of the cementum surface which is more liable to caries and to toothbrush abrasion than enamel.

Dr. Henry Sandler, a public health educator, subscribes to this when he states that emphasis should be placed on affecting the thinking of people in relation to their work, their family life or their social life, leading them to appreciate the importance of health to their total life situation. They should then be permitted to develop from this their own ideas of their dental health needs.

Education of the dental patient is difficult because of the tensional nature of dental practice which often changes the individual to a fearful, worried person. Some attitudes of the dentist, on the other hand, contribute to lack of the patient's understanding. The dentist, misjudging the patient's tenseness, assumes he is unwilling to spend the time for a full study of his condition, that he will not understand the information he is given or that he desires only the limited services indicated by his initial request. These assumptions of the dentist lead to partial service without regard for the patient's total needs.

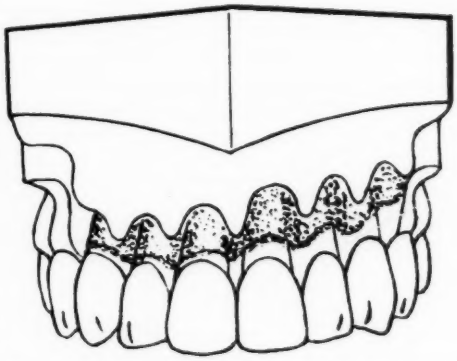


Fig. 2—A view of the margin of the alveolar process discloses a degree of alveolar crest resorption corresponding to the amount of ulatrophia.

Complete clinical diagnosis may disclose the presence of numerous diseases, defects or abnormalities. With the priority of emergency needs or the limitations of specific requests for services, only one or more of the conditions requiring care may be attended to. The conditions most likely to be left untreated, and least likely to arouse strong feelings of concern in either the patient or the dentist, are the gingival and alveolar bone diseases—periodontal disease. Yet, in discussing the prevalence of periodontal

* Associate Professor of Periodontia, and Lecturer in Practice Management, New York University, College of Dentistry.

disease, an evaluating committee of the 1951 Periodontal Workshop stated,[1]

"A review of the literature indicates that gingival disease is prevalent among children and almost universal in adults. More advanced periodontal disease is common in the adult population, and the prevalence increases with age. A few reports can be found which discuss the prevalence of periodontal disease, but the observations vary considerably. The status of information on the subject has been expressed aptly by Marshall-Day:

'Probably the chief reasons for the paucity of reliable epidemiological data on periodontal disease are the lack of a satisfactory system for examination and accurate diagnosis, and the absence of uniformity in methods employed in the assessment of the disease in its various forms.' "

American Dental Association stated the case for modern periodontal therapy and included this cogent statement, "to make the offhand statement that pyorrhea cannot be cured, and let it go at that, is a travesty on fact and an acknowledgement of gross inefficiency on the part of the one who makes it."

The dentist who is himself convinced of the importance of complete dental care to the comfort, well-being, health and general welfare of his patients is likely to gain fuller rewards from practice. Further, the dentist who takes the time to discover and consider the patient's general health status, his psychologic relations to dentistry and his basic wants from dental care learns much to help him decrease the patient's tensions and contributes to his total welfare. Finally, the dentist who educates the patient to acceptance of complete diagnosis by a clear

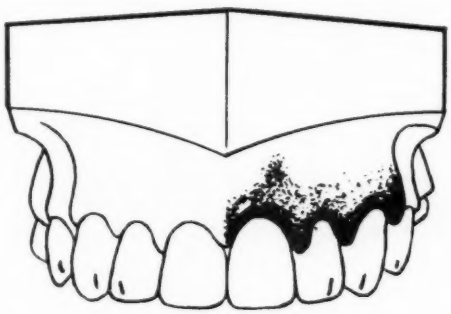


Fig. 3—The left side represents gingivitis with enlargement of the gingival tissue approximaly and at the margins.

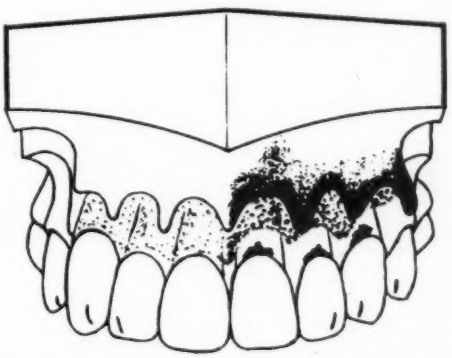


Fig. 4—The root surfaces subjacent to the areas of gingivitis usually present calcareous deposits as a contributory cause.

In many cases the patient who is conscious of some of the effects of periodontal disease is likely to neglect them because of the misinformation extant about the condition. He hears that he cannot expect to keep his teeth forever, that his mother lost her teeth at his age, that he should drink more orange juice, that he should massage his gums with his fingers, that he should try some new color toothpaste, or that pyorrhea can't be cured. To-day's accepted facts on the causes, progress, prognosis and treatment of periodontal disease do not admit such notions. An editorial[2] in the Journal of the

explanation of its value, and who educates him during the diagnosis, motivates him favorably toward appreciative acceptance of complete dental care. Patients who are treated in this way for requested or emergency services feel understood and well cared for. They continue with the dentist in a perfect frame of mind to expect and appreciate regular dental care through the years.

Properly prepared and aptly chosen visual demonstrating materials are invaluable as adjunctive tools in education. Books, pamphlets,

charts, models, roentgenograms and drawings may be prepared for illustration in any specific facet of diagnosis or treatment. The criteria set by the American Dental Association in the catalog of Dental Health Educational Material[3] should be followed in the preparation of such materials. The catalog is a guide to all types of educational materials.

Growing professional awareness of the sigificance of periodontal disease, most recently evidenced by the 1951 Periodontal Workshop,[4] is a forward step toward complete dental care. The important need, beside the dentist's obligation of keeping his knowledge and skill freshened by continuing education beyond the usual level, is to develop techniques for creating understanding in the public mind of the seriousness and widespread prevalence of periodontal disease and for motivating patients to an acceptance of prophylactic and remedial therapy.

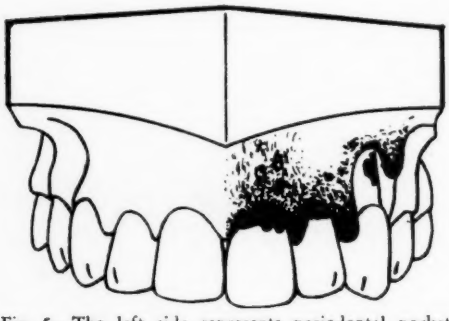


Fig. 5—The left side represents periodontal pocket formation with the gingival and alveolar bone changes that accompany this phase of the periodontal disease. The gingiva forming the tissue side of the pocket on the canine is shown as having been caused to recede by toothbrush abrasion.

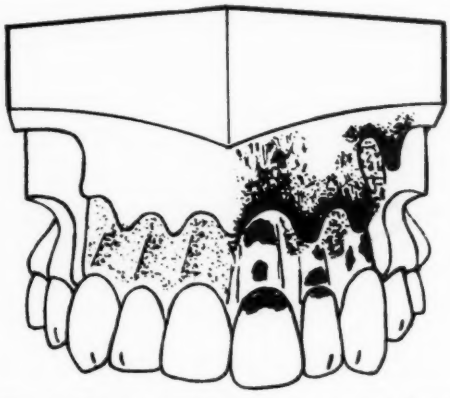


Fig. 6—The root surfaces subjacent to periodontal pockets present calcareous deposits and the crest of the alveolus is shown to be receded further apically.

To satisfy one aspect of patient education, the verbal presentation of the basic values of dental and periodontal treatment may be used. The following from a textbook on management[5] may suggest some points.

"Dental care provides good service at fair fees, with little pain or discomfort; it provides chewing and increases satisfaction from eating; it relieves pain and discomfort and prevents them; it improves appearance and personal hygiene; it increases efficiency by eliminating pain, discomfort and infection; it decreases the fear of tooth loss, unsightliness, uncleanliness, and bad breath."

"Periodontal treatment attempts to restore tooth firmness; reduce gingival edema, overgrowth, pus pockets, exudate and bleeding; retards further occlusal strain, bone loss and gingival recession; and helps to retain teeth for longer time in a healthy environment."

Additional material for verbal presentation of the importance and value of periodontal treatment can be found in Miller's *Textbook of Periodontia.*[6] To cope with misconceptions of patients, the description of the clinical processes usually encountered in the syndrome of periodontal disease, based on the clinical classification by Stillman and McCall[7] is used. For visual presentation, a set of four models have been developed for use as an adjunctive aid to patient education on periodontal disease.

Lay language that is most effective in communication with the average patient is used in discussions with patients and in the description which follows of the periodontia education models.

The right side of each model shows the average normal color, position and contour of normal gingival tissue and the position of the bony process in which the teeth are held.

Model 1. The left side (Fig. 1) shows recession of the gum margin. This has exposed a portion of the root surface which is softer and more liable to decay and to damage by toothbrushing than enamel and is usually darker in color. A small amount of evenly distributed gum recession is acceptable with increased age. Other causes of advanced or uneven gum recession are inadequate use of the teeth, strain of the teeth from uneven biting pressures, clenching and other biting habits, abrasion of the gum by brushing too vigorously and pressures from dental appliances.

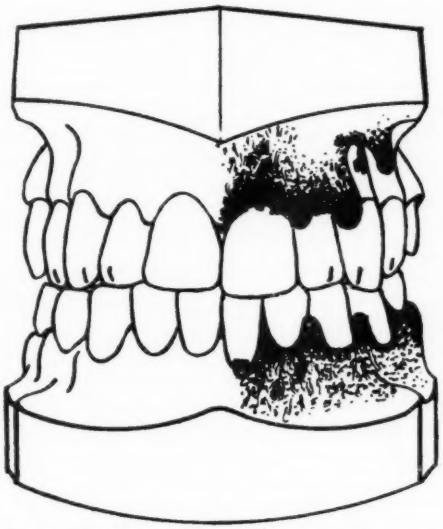


Fig. 7—Model numbers 3 and 4 in occlusion to represent the elevation of the incisal edges of the involved teeth as a concommitant of the alveoloclasia.

A view of the margin of the bony process in which the teeth are held (Fig. 2) shows a degree of bone recession corresponding to the gum recession. This bone recession may not show in an x-ray of the teeth since the outer surfaces are obscured by the tooth roots.

Model 2. This shows gum inflammation, or gingivitis, (Fig. 3) with redness and enlargement of the gum tissue between the teeth and above the margins. At times the color may become deeper red or bluish-red. Accompanying gingivitis the patient may notice bad breath, bad taste, inability to keep the mouth clean by the usual methods and bleeding when brushing or while chewing hard foods.

The root surfaces (Fig. 4) have tartar deposits under the gum margin. Tartar is one of the irritants that cause gingivitis. Others are food deposits, packing of fibrous food between the teeth and a diet of solely soft foods. In addition, diseases which lower resistance as poor nutrition, anemia and others contribute to the cause of gingivitis.

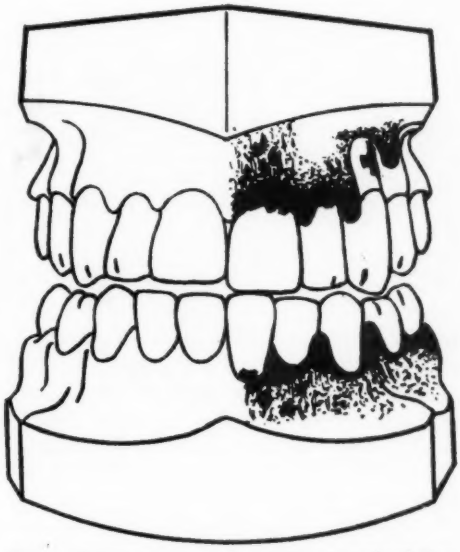


Fig. 8—Represents the effects of such malocclusion. The model of the mandibular teeth, which shows ulatrophia, gingivitis and possible periodontal pocket formation, suggests the need of radiographic examination for proper diagnosis and evaluation of the condition present.

Model 3. This shows pus pocket formation and the gum and bone changes that accompany this stage of disease, (Fig. 5). The pus pocket most often develop slowly as the gums become undermined by progressive loss of the bony process in the earlier stages of disease. Darkening of the gum color and enlargement of the gum forming the pockets is frequently seen, although the gum color may remain normal in

some cases of pocket formation. The gum over the left canine tooth has receded as a result of vigorous toothbrushing in that area.

The root surfaces under the pockets show the presence of tartar. The bony process has receded to nearer the end of the tooth roots. Examination of teeth with bone recession would naturally show them to be looser than normal because of the loss of bone support. The remaining bone is infected and shows signs of inflammation. (Fig. 6)

The causes of recession and gingivitis operate in the development of pus pockets. In addition

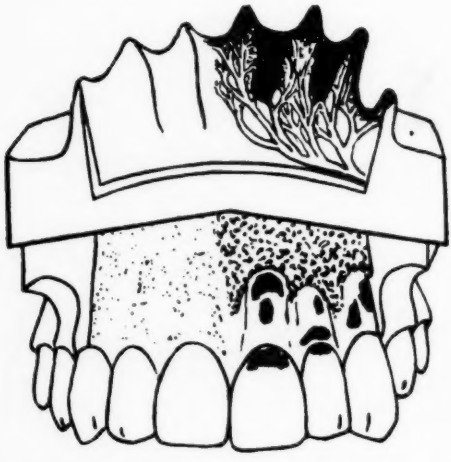


Fig. 9—The tissue side of the periodontal pockets represents adherent masses of granulomatous tissue that develop in the presence of the pockets. Blood vessels in the area are shown to suggest a pathway for the removal of bacteria and toxins as possible causes of focal infection.

(Fig. 7) the loosening of teeth permits their elevation beyond the level of the adjoining teeth. This results in uneven biting pressures during biting and chewing (Fig. 8) and causes further bone loss and loosening. At times, the weakened bone support of the teeth allows them to drift apart resulting in the formation of unsightly spaces and tilted teeth.

The tissue side of the pus pockets (Fig. 9) has adherent masses of tissue that develops as the bone recedes and the pockets develop. This tissue is the basis of the infective process that is present in the pockets. The pus that is formed may be seen when the gum is pressed, or it may be visible only microscopically. It is a threat to the health in either case. The bacteria and poisons may affect vital organs after being absorbed from the blood vessels in the gums and around the teeth. A few of the numerous blood vessels in the gum are shown.

Model 4. The lower model (Fig. 7) shows recession, gingivitis and possible pocket formation. Since more than half the teeth and supporting tissue is below the visible area, examination, with the aid of x-rays, is necessary to evaluate the condition.

SUMMARY

Some hindrances to education of patients are presented. The importance of periodontal treatment as part of complete care is shown. Means for education of patients to acceptance of complete services are given. A set of models as adjunctive aids to patient education on treatment and prevention of periodontal disease is described.

4 East 41st Street, New York, N. Y.

BIBLIOGRAPHY

1. J.A.D.A. 45:1 (July) 1952, p. 35.
2. Johnson, C. N. Once More (Edit.) J.A.D.A. 22:2 (Feb.) 1935, pp. 304-6.
3. Dental Health Educational Material. A.D.A., 222 East Superior Street, Chicago, Illinois.
4. J.A.D.A. 44:6 (June) 1952.
5. Blass, J. L. and Tulkin, I. Successful Dental Practice. J. B. Lippincott Co., Philadelphia, 1947, pp. 12, 38, 46.
6. Miller, S. C. Textbook of Periodontia, 3rd ed. Blakiston Co., Philadelphia, 1950, pp. 733-745.
7. Stillman, P. and McCall, J. O. A Textbook of Clinical Periodontia, Macmillan, 1937.

HISTORY OF NUTRITION*

ELMER VERNER MCCOLLUM, B.A., M.A., Ph.D., Sc.D. (Hon.), L.L.D.†

The science of nutrition is founded upon knowledge of the chemical nature of animal and vegetable substances, and upon the physiological response of living creatures to diets of different composition. Like other sciences, it had slow growth in its earlier history, and greatly accelerated progress in recent decades. It had its beginnings in the desire of apothecaries to prepare medicines, and dates from about the 12th century A.D. Before that time chemists and alchemists were addicted to destructive distillation of animal, vegetable and mineral substances. About the 12th century the art of distilling with a still with an attached condenser, which could be cooled, was discovered. This permitted the recovery of volatile substances other than gases, and led to the production of alcohol from the distillation of fermented beverages such as wine and beer.

As soon as alcohol became available, apothecaries began to use it for extracting elixirs from drug plants; they also distilled fragrant plants with steam and recovered the essential oils and other fragrant substances in the distillate. But the greatest step toward the chemical dissection of vegetable and animal matters was taken by Hilaire Rouelle, about the middle of the 18th century, A.D. He recommended that natural products be analyzed by successively applying a series of solvents, such as ether, alcohol and water, in the order named, since he emphasized the advantages to be gained by applying the poorest solvent first, the next poorest second, etc. By this method a considerable number of individual chemical substances were made familiar to chemists for further study. By the year 1800 A.D. about forty organic substances had been isolated from vegetable products, and chemists were acquainted with such properties of albuminous, saccharine and oily substances, as the characteristic ways in which they burned, how the products of combustion smelled, their tastes, and their solubilities in available solvents. In the years 1800-1820 J. B. Hermbstaedt[1] and I. John[2] were industrious in making analyses of vegetable substances, and reported their results in such terms as albumen, starch, sugar, gum, and ash. They were succeeded by Wm. Prout,[3] who first expressed in three lectures before the Royal Society, the opinion that all the essential nutrients in foods could be comprehended in terms of albuminous, saccharine and oily principles, and mineral salts. Prout's famous lectures were delivered in 1827, and as early as 1816 the famous French physiologist Magendie[4] had made feeding studies with animals and had concluded that no diet could successfully nourish an animal unless it contained the element nitrogen.

Since the muscles, tendons, ligaments, organs, skin and blood, were principally composed of water and "albuminous" bodies, J. Liebig proposed to assess the relative values of different foods on the basis of their nitrogen content,[5] and he constructed a table of food values based on that principle. The earliest great animal experimenter after Magendie was the French student of agricultural problems, J. B. Boussingault.[6] He attempted to formulate farm animal rations for growth and milk production on the basis of Liebig's views that the nitrogen content of a feed determined its nutritive value. He was unable to contribute much to knowledge of foods or nutrition, but he did popularize animal feeding tests as one of the most important approaches to the development of the science of agriculture.

A. L. Lavosier[7] late in the 18th century had demonstrated that the phenomena of respira-

* Presented before the Seventh Annual Meeting of the American Academy of Dental Medicine, Washington, D. C., June 26, 1953.

† Emeritus Professor of Biochemistry, School of Hygiene and Public Health, The Johns Hopkins University.

tion involved the combustion of food substances, with the production of water, carbonic acid and other substances, and all later investigators had in mind the importance of providing what Liebig called "fuel foods" in distinction with "plastic foods," by which he meant the albuminous, or flesh-forming nutrients. Chemical methods for the analysis of foods and feeds, were designed to determine food values for animal production, including growth, milk, wool and egg production, the objective of investigators being to seek to learn the most economical feeds for specific purposes. Since my account of nutrition studies on this occasion must of necessity be only an outline of the sequence of ideas, I need only say that, with the foundation of the earliest agricultural experiment stations in Germany, France and England, and a little later in the United States, studies of animal nutrition from the agriculturalists viewpoint increased rapidly after 1850. Physiologists, among whom the names of C. Voit M. Pettenkofer, W. Henneberg, H. Stohmann, M. Rubner, O. Kellner, N. Zuntz, J. B. Lawes and J. H. Gilbert, were outstanding, broke new ground in devising methods for animal experimentation, and had many imitators in many institutions. They learned much about the chemical composition of feeds, of animal bodies, of the digestibility of feeds and foods, of minimum requirements of animals for maintenance, of the source of energy for muscular work, of some good and some poor combinations of farm crops in feeding values. An immense achievement in better feeding practices resulted from experimental studies between 1850 and 1900, but surprisingly little advance was achieved in improving chemical methods for analysis of foods and feeds, or of insight into the number and nature of the chemical substances which are indispensible in the diet of an animal. Thus, notwithstanding great advances in knowledge of metabolism and of feeding systems, there remained until after 1900 great paucity of knowledge of how to determine by chemical methods the quantities of essential nutrients in vegetable or animal products, and also of how to explain the great discrepancies between the predicted and the realized results of feeding rations based on chemical analysis. The investigations of the men just mentioned are common knowledge and have been discussed for years in standard text-books dealing with metabolism and nutrition, especially by G. Lusk,[8] H. C. Sherman,[9] and H. P. Armsby.[10]

The outstanding defects in nutritional research before 1900 were too great faith in the significance of chemical analysis of foods, and over-simplification of theory concerning the nutritive needs of the animal body. C. Voit[11] wrote that, instead of employing diets composed of natural foods, and of great complexity from the chemical standpoint, it would be better to compare mixtures of isolated and purified proteins, carbohydrates, fats and mineral salts, the ingredients to be derived from different sources. But he said that the palatability of such mixtures made them unacceptible to animals, and would lead to failure for this reason. Others, notwithstanding the difficulty of unpalatability, attempted to nourish animals on such mixtures of purified, isolated food substances, and included the classes of substances asserted by Prout to be the significant food principles, viz., proteins, fats and carbohydrates, together with what were believed to be sufficient amounts of the inorganic salts which were considered important for animal nutrition. The first to experiment in this manner was N. Lunin[12] whose specific problem was to study the significance of excess of either acid or basic inorganic constituents of the diet on the health of animals. His animals failed rapidly on a mixture of casein, milk sugar, fat and salts which appeared from chemical composition to closely resemble milk. He drew the extremely important conclusion that since his diet contained all of the principal ingredients of milk, but was inadequate nutritionally for mice, whereas mice thrive for long periods when given only whole milk, there must be in milk nutrients of unidentified nature, without which mice cannot survive.

After Lunin's experiments were described, a number of investigators attempted to discover

what was lacking in a mixture of proteins, carbohydrates, fats and salts, to nourish animals. The writer has discussed these studies, about fifteen in number,[13] elsewhere, and it is here only possible to state that they tried addition of nucleic acid, phosphorized protein, phosphorized fats, each of these, as they were discovered, being thought of as possibly an indispensible nutrient for animals. But none of these substances could complete, nutritionally, the mixture of isolated and purified substances, the only ones which chemists, and physiologists could conceive of as important in nutrition. The most fertile thought which led to a new experimental approach to the solution of how to learn about the unidentified nutrients, their number and nature, was made by C. Pekelharing[14] in 1905. After observing nutritive failure of his animals fed purified mixtures of isolated food substances, he found that small additions of whey, although providing very little of any of the known nutrients, protein, fat or carbohydrate, had an extraordinary beneficial effect on the health of the animals. On this evidence he stated his opinion that there existed in milk, one or more essential nutrients which chemists were unable to detect by their methods. It is a curious fact that he, like Lunin, twenty-four years earlier, failed to follow up such a promising line of investigation.

In 1897 C. Eijkman[15] first observed the development of multiple neuritis in fowls restricted to polished rice as their sole food, and found that they did not develop the disorder when given whole rice or rice polishings, or when dosed with extracts of rice polishings prepared with water or alcohol. This discovery was an epoch-making event, although he interpreted the observations to mean that there was in the endosperm of rice a toxic substance which acted primarily on the nervous system, and a pharmacological antidote for this nerve poison in the bran layers of rice. It was G. Grijns[16] who, in 1901, first correctly interpreted the relation between a polished rice diet and the development of experimental beriberi as being due to deficiency of some essential nutrient not comprehended in the current methods for chemical analysis of foods.

The role of amino acids in nutrition began in 1820 when Braconnot[17] subjected gelatin and muscle to hydrolysis with strong mineral acid, and isolated glycine and leucine. Eighty years later, at the end of the century, sixteen amino acids were known to arise from the digestion of proteins either by enzymes or by acid hydrolysis. The investigations of A. Kossel[18] and E. Fisher[19] about that time revealed that proteins differed in their amino acid composition to a surprising degree. This suggested that the proteins from different sources must have strongly contrasting nutritive values depending on their amino acid composition. Willcock and Hopkins[20], and especially T. B. Osborne and L. B. Mendel[21] soon described experimental studies which showed that the biological value of a protein is determined on its amino acid composition. Nutrition investigators thenceforth thought in terms of the amino acid requirements of the organism rather than of protein. W. C. Rose[22] has published experimental evidence that ten of the twenty-three presently known amino acids are indispensable in the nutrition of the rat; the others being capable of synthesis in the animal body.

On the basis of the curative action of extracts of rice polishings on beri-beri pigeons, and the prevention of beri-beri in humans by substituting various foods for part of the polished rice in oriental countries, C. Funk[23] coined the name vitamin, to designate a basic substance indispensible to life.

The second vitamin to be discovered was demonstrated in 1912 by the present writer and M. Davis.[24] They demonstrated that a hitherto unsuspected nutrient was contained in butter fat and egg-yolk fat, which was absent from lard and olive oil. Deficiency of this substance caused profound injury to the health of young rats and was marked especially by severe pathological changes in the eye structures. Ten years later, McCollum, Park, Simmonds and Shipley[25] demonstrated that a second fat-soluble vitamin played an important role in directing the processes of bone growth. In the same

Outgoing president, Harold R. Gelhaar, presents the Academy's "Certificate of Merit" to Convention Chairman Walter I. Levine.

HIGHLIGHTS OF THE

AMERICAN ACADEMY OF DE

Seventh Anual M

SHOREHAM HOTEL WASH

JUNE 26, 27, 28,

1953-54 Academy officers: (l. to r.) Alvin H. Berman, president; William M. Greenhut, secretary; George F. Clarke, president-elect; George G. Stewart, treasurer; S. Leonard Rosenthal, vice president; and Irving Yudkoff, editor of the Journal of Dental Medicine.

FOUR PROMINENT SPEA

Joseph L. Bernier, D.D.S., M.S.

Elmer V. M

Academy ladies are all smiles as they pose in front of the Executive Branch of the White House after visiting with Mrs. Mamie Eisenhower.

James H. Shaw, B.A., M.S., Ph.D.

Ernestine

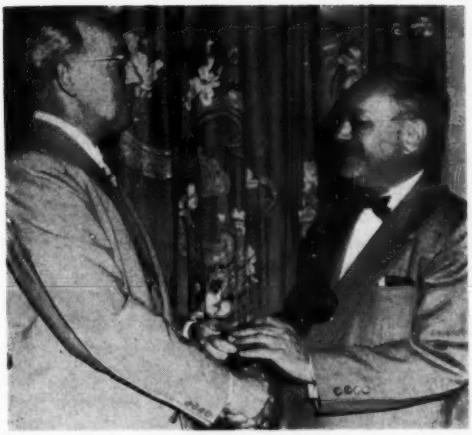
HLIGHOF THE

EMY'S DENTAL MEDICINE

Anual Meeting

TEL WASHINGTON, D. C.

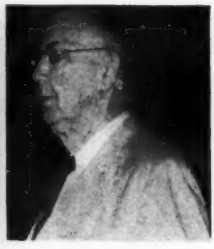
6, 228, 1953



Outgoing president, Harold R. Gelhaar presents the gavel to Incoming president, Alvin H. Berman.

Past President, George A. Bruns presents the "Past President's Plaque" to Harold R. Gelhaar, outgoing Academy president, as Mrs. Gelhaar looks on.

ROMIT SPEAKERS



.S., M.S. Elmer V. McCollum, Ph.D., ScD., LL.D.

S., Ph.D. Ernestine Becker McCollum, B.S., M.A.

Round Table Panel: (l. to r.) Benjamin Poster, Edward C. Dobbs, Harry Roth, moderator; Arthur Dick, Irving Abramson, and Neal W. Chilton.

Photos by Chase Ltd., Washington 6, D.C.

year Evans and Bishop[26] showed that another fat-soluble vitamin, which came to be known as vitamin E, is necessary for reproduction, although not for growth.

In 1915 the present writer and M. Davis[27] developed a method for the study of the dietary deficiencies of single natural foods such as a cereal grain, by feeding it as the sole source of nutriment, and in other experiments, with such additions as one inorganic salt, one fat containing the fat-soluble vitamin A, a protein from a different source than the cereal grain for the purpose of supplying aminoacids in abundance which were not in sufficient amount in the cereal grain. Then two such additions in the possible combinations were fed together with the cereal grain, and finally the three types of supplements were included in another experiment. This procedure showed that there are three principal deficiencies in wheat, corn or oats. These seeds are completed nutritionally by the three types of supplements, but less well improved by any two of them. This procedure we called the biological method for the analysis of a food-stuff. In principle it has continued to be used for many kinds of food investigations to the present time.

The study of the relation of tooth structure and tooth composition to tooth health is of relatively recent development. Time at my disposal does not permit giving a step by step account of researches in this field. The element phosphorus was discovered among the products of the dry distillation of the dry solids of urine in 1669 by Brande, a merchant in Hamburg. It was not until ninety-nine years later that J. G. Gahn, in Sweden, discovered that bones contain much calcium phosphate.

In 1805 Gay-Lussac wrote a letter to Berthollet[28] in which he said that an Italian chemist, Morichini, had observed that when the teeth of a fossal elephant were treated with sulfuric acid, hydrofluoric acid was evolved, as shown by its etching of glass. The great Swedish chemist Berzelius made many determinations of fluoride in teeth, and found it to be always present. Nothing of special interest to students of diseases of the teeth appears to have been published until 1892, when Sir James Crichton-Browne[29] gave a lecture on Tooth Culture before the Eastern Counties Branch of the British Dental Association. This lecture is of considerable historical importance but seems to have escaped the notice of recent writers on dental caries. He called attention to the previous chemical analyses of teeth, which revealed the presence of fluoride as a normal constituent of teeth, and also pointed out that fluoride was much more abundant in the outer layers of grains of cereals, and in the husks, than in the parts of the grain which modern milling practices separate in the manufacture of flour for bread-making, in which fluoride is essentially lacking.

Sir James then went on to say that it appeared that calcium fluoride was the most important constituent of enamel which contributed to its hardness, and to the durability of the teeth. He attacked white bread, which had become a prominent constituent of the diet of the people of Britain, as the probable cause of thin and inferior enamel, which, he inferred, made British teeth abnormally susceptible to decay. He suggested that re-introduction of some suitable source of fluoride into the diet might be of value in fortifying the next generation against the ravages of dental caries. He suggested food as the source of fluoride, and did not mention water in this connection, nor did he know of mottling of enamel.

The role of fluoride in dental health began with the studies of Dr. F. S. McKay in 1908[30] who first called attention to the condition in certain localities. In 1909 Dr. G. V. Black, who was a distinguished student of enamel dystrophies, when shown teeth exhibiting this lesion, stated that he had never seen nor heard of it. But he immediately became interested and in co-operation with Dr. McKay, carried out the pioneer studies on mottled enamel, and made the dental profession familiar with the problem. Their first publication on this dental abnormality was in 1916.[31]

In 1925 McCollum, Simmonds, Becker and Bunting[32] described the abnormalities in the structure of the teeth of rats fed excessive amounts of sodium fluoride. Dr. Russell Bunting has stated in his interesting book, The Story

of Dental Caries[33] that we did not recognize the condition in our rats' teeth as mottled enamel. However, our study served a useful purpose, as was stated by Margaret C. Smith and I. Schour[34] in their chapter on Experimental Dental Fluorosis. Mrs. Smith relates that, having induced mottling of the incisors of experimental rats by including in their diet the mineral matter obtained by evaporating water from areas where human teeth were mottled, she recognized the similarity of the appearance of these teeth with those of our rats, where the cause of the mottling was known, and accordingly she repeated and confirmed our observations, the interpretation of the lesions we had produced having been in error. Once the lesion of mottled enamel had been traced to the effects of excessive fluoride in the diet, the field of inquiry into every aspect of the part played by fluoride in determining the development of the teeth and their susceptibility to dental caries was open. I have not time to discuss further advances in this segment of nutritional research, nor is there need to do so, since the entire subject has been thoroughly discussed by the principal investigators in this field in Fluorine and Dental Health.[34] The outstanding contributors to knowledge of this subject are W. D. Armstrong, G. J. Cox, H. T. Dean, C. F. Detherage, P. Jay, M. M. Levin, F. S. McKay, I. Schour, H. V. Smith, M. C. Smith, J. F. Volker, and H. B. Younger.

Any discussion, however brief, of the pioneer investigations on the effect of faulty diets on the structure and health of the teeth, must give a prominent place to the excellent studies of Lady May Mellanby which were continued over two decades between about 1920 and 1940. The earlier of these are well summarized by her.[35]

So much has been written in recent years on the causes of dental caries, that everyone has had opportunity to discover that many aspects of this problem have been studied experimentally. The microbial activity in the environment of the teeth has been shown to be greatly influenced by the character of the food residues which become lodged between teeth, or in developmental defects, or adhere to the enamel surfaces. The subject is very many-sided, and has been discussed in detail in a recent publication from the National Academy of Sciences.[36]

Returning to the general subject of experimental study of the relation of diet to health, it may be said that the feeding of many kinds of diets derived from different sources, and which were inadequate in one or more respects, caused pathological effects in the animals. The interpretation of the meaning of symptoms, and the systematic study of fractionating crude extracts from various foods, in order to simplify the chemical preparations which would prevent or cure a certain symptom, has been the most rewarding procedure. It has led to an understanding of the number and nature of the individual chemical substances, inorganic as well as organic, which must be provided in the diet in order to safeguard the metabolic scheme and support health in all its manifestations.

A complete understanding of the metabolic significance of each essential aminoacid, vitamin, inorganic nutrient, including the trace elements, and the distribution of these in natural foods and processed products, forms a body of knowledge more valuable from the standpoint of health and well-being, than knowledge of the curative powers of medicines in disease, extraordinarily important to human welfare as these are. The economics of animal production have been profoundly influenced by modern nutritional investigations. There remains much to be learned, both as respects nutrients which are still unrecognized, and especially as to how each of the essential food substances participate in the metabolic scheme.

2510 Talbot Road, Baltimore, Md.

BIBLIOGRAPHY

1. Hermbstaedt, S. F. Versuche u. Beobachtungen uber die chemische Zergliederung, vegetabilish-organischer Erzeugnisse, u.s.w. Erdmann's Journal fur technische und oekonomische Chemie, 12, 1-53, 1831.
2. John, Johan Friederich. Chemische Tabellen der Pflanzenanalysen. Nurnberg, 1814.
3. Prout, W. On the ultimate composition of simple alimentary substances. Philos. Mag. 2 (2nd Ser.), 144-145, 1827; 3, 107-111, 1827.
4. Magendie, F. Précis éleméntaire de physiologie. Ann. chim. et de phys. 3, 66, 1816.
5. Liebig, J. Chemische Briefe, 3 Aufl. 463, 1851.
6. Boussingault, J. B. Analyses comparées des Alimens consommés et des Produits rendus par une Vache laitière. Ann. chim. et de phys. 71, 113-136, 1839.

7. Lavosier, A. L. Memoir on the respiration of animals. The Works of Lavoisier. Vol. 2, p. 174, 1877.
8. Lusk, Graham. The Science of Nutrition, 4th ed. pp. 1-844, Saunders, 1931, p. 33.
9. Sherman, Henry Clapp. Chemistry of Food and Nutrition. Macmillan, 1927, 3d ed., pp. 1-636.
10. Armsby, Henry Prentis. The Principles of Animal Nutrition. Macmillan, 1903, pp. 5-98.
11. Voit, Carl. Über die Ernährung des Menschen in verschiedenen Klimaten. Rieger, Munich, 1881, p. 19.
12. Lunin, N. Bedeutung der anorganischen Salze fur die Ernahrung. Inaugural Dissertation, Dorpat, 1880; Zeitschrf. physiol. Chemie, 5, 31, 1881.
13. McCollum, E. V. Nuclein Synthesis in the animal body. Amer. Jour. of Physiol. 25, 120, 1909.
14. Pekelharing, C. Feeding experiments with purified food-substances. Niederlandsch. Tijdschr. NedGeneesk. 2, 3, 1905.
15. Eijkman, C. Ein Beri-beri anliche Erkrankung der Huhner. Virchow's Archiv. 148, 523, 1897.
16. Grijns, G. Concerning polyneuritis gallinarum. Geneesk. Tijdschr. Ned. Indie, 41, 1, 1901.
17. Braconnot, H. Cited by Melville Sahyun: Amino acids and proteins. Reinhold Pub. Corp., 1944. 251 pp., p.15, 16.
18. Kossel, A. Ueber die einfachsten Eiweisskörper. Maly's Jahresber. der Thier-Chemie, 27, 9, 1897.
19. Fisher, E., Sayhun, M., Outline of the Amino-Acids and Proteins. Reinhold, 1944, pp. 93-113.
20. Willock E. and Hopkins, F. G. Journ. of Physiol. 35, 88, 1906-07.
21. Osborne, T. B. and Mendel, L. B. Bull. No. 156, Parts I and II, Carnegie Institution of Washington, 1911.
22. Rose, W. C. The nutritive significance of the amino acids. Physiol. Reviews 18, 109-136 (1938).
23. Funk, C. Die Vitamine, Wiesbaden, 1914. Berg man, 193 pp.
24. McCollum, E. V. and Davis, M. The necessity for certain lipins in the diet. Journ. of Biol. Chem. 15, 167, 1913.
25. McCollum, Simmonds, N. Park, E. A. and Shipley, P. G. J. Biol. Chem. 53, 293, 1922.
26. Evans, H. M. and Bishop, K. The relations between fertility and nutrition. Journ. of Metabolic Research 1, 319-333, 1922; 1, 335-355, 1922.
27. McCollum, E. V. and Davis, M. The Essential factors in the diet during growth. J. Biol. Chem. 23, 231, 1915; McCollum, E. V. Supplementary dietary relationships among our natural food-stuffs. Harvey Lecture Series 1916-17, J. Amer. Med. Assoc. 68, 1379, 1917.
28. Editorial comment, Philos. Mag. 23, 264, 1905-06.
29. Crichton-Browne, Sir James. Tooth culture. Nature 46, 229, 1892.
30. McKay, F. S. Mottled enamel: Early history and its unique features. Fluorine and dental health. Publication of the American Association for the Advancement of Science No. 19. F. R. Moulton, Editor. Washington, D.C., 1942.
31. Black, G. V. and McKay, F. S. Mottled teeth—An endemic developmental imperfection of the teeth hitherto unknown in the literature of dentistry. Dental Cosmos, 58, 132-156, 1917.
32. McCollum, E. V., Simmonds, N., Becker, J. E. and Bunting R. W. The effect of additions of fluorine to the diet of the rat on the quality of the teeth. J. Biol. Chem. 63, 553, 1925.
33. Bunting, R. W. The story of dental caries. Overbeck Co. Ann Arbor, 1953, pp. 1-94.
34. Smith, M. C. and Isaac Schour. Fluorine and dental health. Publication No. 19, 1942. American Association for the Advancement of Science. Smithsonian Institution, Washington, D.C., pp. 32-49.
35. A survey of the literature of dental caries. Publication 225. National Academy of Sciences. Edited by the Committee on Dental Health, for the Food and Nutrition Board. 660 pp., 1952.

FLUORIDATION OF PUBLIC WATER SUPPLIES

Further confirmation of the safety and effectiveness of the fluoridation of public water supplies is provided in recommendations made by a scientific team of impartial observers from another country, The Journal of the American Dental Association reported recently.

A mission of British scientists, following an extensive three months' investigation in the United States and Canada last year, urged that the measure be considered for adoption in Great Britain. Their recommendations are contained in a recently-issued British government White Paper.

"Should the recent recommendations of four eminent health authorities from Great Britain be adopted reasonably soon, the dental health of British children, beginning at least with the next generation, will be considerably better than that of their fathers," The Journal said.

The editorial cited the three conclusions reached by the investigators:

1. The procedure will "without doubt" reduce the rate of tooth decay materially.

2. No evidence exists of any difference in the biological effect of so-called artificially fluoridated water and that of naturally fluoridated water.

3. No evidence exists of harm to the health from consumption of fluorides at recommended levels.

Medical Views on Oral Problems

NEW NERVE PATHWAY FOR MENIERE'S DISEASE*

Rosen demonstrates that Ménière's disease is not localized exclusively in the internal ear but that other nerve structures and pathways are involved. Patients in whom the isolated chorda tympani nerve was subjected to electrical stimulation under local anesthesia reported hearing such sounds as "hissing, buzzing, roaring, ringing, and bubbling," and some experienced vertigo similar to that of Ménière's disease. Hearing and vestibular functions were preserved in 14 patients with Ménière's disease after sectioning of the chorda tympani alone or together with Jacobson's tympanic plexus. Vertigo ceased in 11 patients and persisted in two. Tinnitus disappeared in one, in seven it was no longer annoying, and in six it was unaffected. In one patient in whom the chorda had been sectioned three years before, the hearing returned to a useful high level and remained so, and tinnitus and a sensation of fullness were almost absent. The author points out that the chorda tympani nerve continues upward from the geniculate ganglion as the nervus intermedius. The chorda tympani and the nervus intermedius are a part of the same sensory system, and may be regarded functionally as one nerve, namely, the chorda intermedius. The intermedius communicates with the vestibular branch of the eighth cranial nerve in the internal auditory canal, then continues centrally to join the tractus solitarius, and ends in the seventh sensory nucleus in close relationship with the vestibular and cochlear nuclei. By this pathway, impulses along the chorda intermedius could affect the vestibular function peripherally and both vestibular and cochlear functions centrally. This pathway explains the results of chorda tympani simulation (vertigo and tinnitus), and also the cessation of vertigo and relief of tinnitus following section of the chorda tympani in Ménière's disease. The author describes two patients with severe Ménière's disease in whom section of the chorda tympani was followed by cessation of vertigo and almost complete cessation of tinnitus. Rosen feels that the discovery of this new pathway will stimulate further investigation and may in turn reveal other structures involved in Ménière's phenomenon. Sectioning of the chorda tympani eliminated vertigo and relieved tinnitus in Ménière's disease, while preserving hearing and vestibular functions.

* Medical Literature Abstracts J.A.M.A., Aug. 15, 1953, p. 1564.

ERYTHROMYCIN*

Erythromycin is a nontoxic antibiotic that is very effective against many bacteria, especially gram-positive organisms such as the pneumococci, the staphylococci, and various hemolytic and nonhemolytic streptococci. The fact that erythromycin must be given orally, because it is not readily soluble in water, makes its administration convenient and easy. It is perfectly tolerated in therapeutic doses and no complications affecting the kidneys, ears, liver, or blood as a result of its use have yet been reported. Mild digestive disturbances sometimes occur, but then disappear when administration of the drug is suspended. Contact with gastric juice reduces the activity of erythromycin, which is strongly alkaline, and its absorption is delayed and reduced when there is food in the stomach. The average initial dose is 1.5 to 2 gm. every 24 hours, given in four doses at six hour intervals, as far removed from mealtime as possible. Smaller doses may later be used for maintenance. Erythromycin has been used effectively in diseases of the lungs, endocarditis caused by Streptococcus viridans, benign lymphogranulomatosis, and various other infections. It occupies a place between the broad spectrum antibiotics, such as aureomycin and oxytetracycline (Terramycin), and penicillin, and is especially valuable as a substitute for penicillin in cases of penicillin resistance.

* J. A. M. A., Sept. 5, 1953, p. 71.

PATHOGENIC POTENTIALITIES OF DOMESTIC WATER FLUORIDATION*

In 1930 it was established by biochemists in Arizona that fluorine in the water of the regions where "mottled" teeth are prevalent was responsible for this condition. The discovery that the incidence of tooth decay was also low in regions with relatively high fluorine content in the drinking water quickly led to the assumption that the natural fluorine content of the local water supply was the beneficial agent. Little attention was given to the possible favorable effects of sunlight, to the superior mineral content of foods, or to the fact that these regions produced citrus fruit with its high content of vitamin C. The precipitous conclusion regarding the relation of fluorine to dental health quickly led to agitation for fluoridation of domestic water supplies, with the result that some 20 million Americans are compelled to partake of this medicated beverage irrespective of its possible long-

term deleterious effects. The author directs attention to the strong affinity of fluorosis for calcium, which makes it unite with the calcium of teeth and bones. The ingestion of vegetable and animal food from areas with high fluorine concentration has resulted in the cumulative deposition of this element in the bones and teeth of man and animals. Subjects who have been using naturally fluoridated water for several decades have considerable periodontal disease, with enlargement of the roots and narrowing or closure of root canals and pulp chambers; premature aging of the tooth structure is promoted and extraction is made very difficult, with tendencies to root fracture. Many of these patients have severe gingivitis and pyorrhea. Workers in cryolite mining, who inhale fluorine dust, exhibit not only the aforementioned dental defects but also osteophyte formations on bones, osteosclerosis, calcification of tendons, "poker backs," and fixation of the thoracic wall. These same effects have been noted in parts of Africa and India where the natives have long been using naturally fluoridated water. The author offers suggestions for protection against the toxic effects of fluorine for those who find themselves unwilling subjects of this experiment in mass medication. 1. He recommends the daily ingestion of small doses (5 to 10 grains [0.3 to 0.6 gm.]) of certain innocuous calcium salts; calcium ascorbate is particularly valuable, since it also releases vitamin C. 2. An optimal intake of foods rich in calcium is desirable, such as milk products and green salad vegetables. 3. An optimal intake of citrus fruits will provide natural vitamin C to help counteract the toxic fluoride.

* Abstracted from Archives of Pediatrics, April 1953, by J.A.M.A., Aug. 22, 1953, p. 1663.

DENTAL FOREIGN BODIES IN THE LUNG AND ESOPHAGUS*

Dental foreign bodies that have found their way into either the lung or the esophagus constitute a relatively small but important part of endoscopic practice. According to Hagens,[1] there are three main sources from which these cases originate. In the first group, a tooth or portion of a tooth, an inlay or filling, tartar, a piece of plaster impression, or a broken part of an instrument may slip from the grasp of the dentist and be aspirated or swallowed before the material is recovered. A second source of dental foreign bodies is supplied by patients who permit their teeth and dentures to fall into a deplorable state of disrepair. During the act of eating or swallowing, for example, a portion of the denture is broken, swallowed, and lodged in the esophagus, an event requiring endoscopic intervention. In the last group, teeth are loosened and sometimes lost as the result of manipulation of mouth gags and instruments during surgery in which a general anesthetic is used; this occurs especially in children undergoing tonsillectomy and adenoidectomy.

In general, patients should be carefully examined just as soon as it has been established that a dental foreign body has been swallowed. Roentgenograms are most helpful, not only in demonstrating the presence and site of the foreign body itself but also in displaying the reaction of tissues surrounding the object. When barium is used in the esophagus, it may stop at the level of the foreign body and, in some instances, cling to part of it. A tooth lodged in the bronchus of a child frequently produces high fever and a persistent cough, as well as other signs and symptoms pointing to the presence of a foreign body in the lung. Hagens asserts that in the case of two patients gold inlays slipped from the dentist's grasp; in one patient, a tooth was aspirated during the process of extraction; in another patient, a piece of dental plaster was aspirated; in two patients, dentures loosened during the act of swallowing; and, finally, in two patients, there was loss of a tooth during surgery of the throat.

1. Hagens, E. W.: Dental Foreign Bodies of the Lung and Esophagus, Quart. Bull. Northwestern Univ. M. School 27:123, 1953.

* J. A. M. A., Sept. 5, 1953, p. 35.

Book Reviews

The Dynamics of Psychosomatic Dentistry. By Joseph S. Landa, D.D.S., F.A.C.D., and six contributors. Dental Items of Interest Publishing Co., Inc., Brooklyn, New York. 435 pages. Price $8.75.

For many years we have been reviewing books dealing with dental subjects of one type or another, each having a message for the subject discussed. There have been a few books with a broader concept of treatment but they too have been specific for the field covered.

Dr. Landa's book is one with a broad concept of treating the dental patient. He views the patient as an entity and not as an oral problem. This is a splendid point of view, one that should be given much more consideration than is currently being done. Each patient visiting the dentist or physician wants to feel that at that particular time he or she is the most important problem in the doctor's life. The practitioner should take a little time to explore the patient's reason for this and in return the doctor will find help for a good treatment plan. In these pages, the total personality of the individual is correlated with the treatment of the dental problem. This is a unique point of view and a welcome one.

The book is divided into short chapters dealing with basic ideas relating to the patient's reactions. Numerous principles of exploring the patient's reactions are discussed and many interesting examples are cited.

Dentist-patient relations are covered as they relate to the presentation of the case, the discussion of the fee and finally the treatment phase. All of this material is shown to be associated with the general deportment and health of the patient. Age levels are discussed from one to seventy.

The contributors have emphasized the psychosomatic problem in various fields. Franz Alexander discusses "Individual Psychotherapy"; Cecil H. Bliss, "The Psychologic Factors Involved In Presenting Denture Service"; Henry Harper Hart, "The Practical Psychiatric Problems In Dentistry"; Robert S. Gilbert, "The Dentist-Patient Relationship and The Neurotic Patient In Dental Practice"; Samuel Charles Miller, "Psychosomatics and Periodontia"; and William Wolfe, "Psychosomatic Mechanism."

The book is well organized, contains a tremendous amount of information on psychosomatics and is a welcome addition to our dental literature. Dentists and physicians should read this excellent volume.

LOUIS R. BURMAN

Functional Neuroanatomy. By Wendell J. S. Krieg, Ph.D. The Blakiston Company, Inc. 600 pages, 418 illustrations. $9.00.

Knowledge of the brain has expanded considerably since the first edition of this textbook was published ten years ago. The cathode-ray oscilloscope, applied at first to peripheral nerves, is now widely used for exploring the central nervous pathways. For a time, its findings there were largely confirmatory of those already demonstrated by other methods, except for the cerebellum; but now new connections and conditions of their activity are being demonstrated, and the oscilloscope is, in its turn, suggesting anatomical problems. The more generalized use of the stereotaxic machine to guide stimulating, destroying or recording electrodes has required of experimenters a more precise information of the position, form and relations of the units of the brain, and neuroanatomical science has profited from the results. Already a beginning is made in stereotacically controlled operations on human patients. The third important line of investigation has been the redoubled use of the methods of demonstrating experimental degeneration, retrograde and Wallerian. Observation of actual degenerating nerve fibers and terminals is taking its proper place in hodologic investigations; while the Marchi method, available for the past sixty years, is becoming more fully exploited for minute and specific experimental lesions.

All these methods of study exact working knowledge of the fitting together three dimensionally of the tracts and nuclei, and in terms of standard planes of section. The slice reconstruction method, developed by the writer for the first edition of this text, has proved of utility, not only for this purpose, but also for recording by reconstruction primary investigations of unknown material, especially of Marchi series.

These methods and their results have predicated the direction taken in the present revision. Attention is currently being drawn to the thalamus and to the cerebral cortex. The nuclei of the human thalamus have been the subject of a series of slice reconstructions, while the areas of the human cerebral cortex have been represented on all aspects of the cerebrum.

The medullary centers of the cerebrum and cerebellum have long been the great terrae incognitae of the nervous system. These may, however, by dissection of especially prepared brains, be visualized to a degree hitherto unrealized. For the results to be of value, they must be exactly portrayed with attention

to the third dimension. The illustrations accompanying these sections of the text are a beginning in this direction.

An exact visualization of the internal anatomy of the temporal bone is so important for an understanding of the mechanisms of hearing and vestibular function, that a sequence of drawings has been prepared since neither dissections nor sections are adequate in laboratory teaching.

The emphasis throughout this revision has been, however, on drawings rather than text. Added drawings clarify the existing text but added text increases the length of the course. Even the expert neuroanatomist becomes confused when reading textual material which does not constantly refer to illustrations. When these are merely portrayed by sections, he must by effort supply the third dimension. The present writer holds it to be an author's obligation to represent in a drawing for the aid of the student what the neuroanatomist visualizes when he views a given section.

Not long ago the only part of the human brain known with any degree of completeness was the free part of the brain stem, and the laboratory work consisted almost exclusively of a study of selected sections from the midbrain downward, and a gross examination of the great remainder of the brain. This was understandable, as there were no definitive papers on the human diencephalon, the cortical areas had never been systemically described or illustrated and experimental investigations were patchy, at best; but this has been changed. It has behooved the author of a modern textbook of neuroanatomy to respond to this altered state, and to look forward to the future by giving these subjects their proper weight, for it is chiefly here that additions will be made within the lifetime of the present-day student.

Competition with other subjects of the medical curriculum which are growing rapidly, is causing the anatomical subjects to be reduced in time, but neuroanatomy should be the exception, for it is expanding in fullness of understanding and in importance to clinical medicine.

I. NEWTON KUGELMASS

Health Saboteurs. By Robert William Davis, M.D., New York City, Pageant Press, 1953. 306 pp. $4.00.

A Canadian physician with over forty years' experience presents a well-documented argument in favor of routine tonsillectomy. According to the author, the early removal of tonsils and adenoids should be standard procedure in preventive medicine.

Dr. Davis defends his thesis with authoritative facts, clear photographs and diagrams, and a comprehensive bibliography. His findings show that the tonsils are dangerous ancestral relics, carriers of infection which may cause sinusitis, facial deformities, and such crippling diseases as rheumatic fever, deafness and mastoiditis.

TEMPLE UNIVERSITY SCHOOL OF DENTISTRY

Temple University Dental School will offer a course in "Periodontics" for seven successive Thursdays beginning February 11, 1954 from 9 A.M. to 4 P.M. The aim of this course will be to give the general practitioner the most recent developments and changed concepts in the modern practice of periodontics. Instruction will be by lecture, clinical demonstration, laboratory practice and informal discussion. Applications for enrollment should be sent to:

DR. LOUIS HERMAN
Temple University School of Dentistry
3223 North Broad Street
Philadelphia 40, Penna.

Academy Proceedings

AMERICAN ACADEMY OF DENTAL MEDICINE MID-WINTER MEETING ON DECEMBER 6th, 1953

The American Academy of Dental Medicine will hold its annual Mid-Winter Meeting and Luncheon at the Hotel Statler in New York City, on Sunday, December 6th, 1953. There will be a business meeting for members at 10 A.M. followed by a luncheon. The afternoon will be devoted to a symposium on "Geriatrics." The program is as follows:

Moderator: Joseph I. Echikson, M.D., Newark, N. J.

Introductory Speaker: Professor Alonzo F. Myers, New York, N. Y.
Chairman of the Department of Higher Education, School of Education, New York University.
Title: "Planning for Retirement."

Second Speaker: Henry M. Goldman, D.M.D., Boston, Mass.
Title: "Geriatric Changes in the Oral Mucosa."

Final Speaker: C. Ward Crampton, M.D., New York, N. Y.
Title: "DeAging."

All interested dentists are invited to the luncheon and symposium. The luncheon will commence at 12:30 P.M. followed by the symposium at 2 P.M. Reservations may be obtained for the luncheon by forwarding a check for $6 to Dr. William H. Copperthwaite, 36 Riverside Avenue, Red Bank, N. J.

ACADEMY ANNOUNCES PLANS FOR 8th ANNUAL CONVENTION

The Philadelphia Section of the American Academy of Dental Medicine will be the hosts for the 8th Annual Convention to be held at the Penn-Sheraton Hotel, in Philadelphia from May 13th-16th, 1954. The theme of the convention will be "Diagnosis and Treatment Planning." Co-Chairmen S. Leonard Rosenthal and George G. Stewart announce that definite plans have already been formulated for this convention. Some of the finest dentists and physicians from the Philadelphia area have been invited to present papers and lead discussions.

Philadelphia has much to offer as a cultural, historic, and amusement center. Plan now to attend the 8th Annual Convention in the "City of Brotherly Love."

ADDRESS BY DR. ALLAN N. ARVINS UPON RECEIVING FELLOWSHIP IN THE AMERICAN ACADEMY OF DENTAL MEDICINE*

I deeply appreciate this honor and all that it signifies. There are moments in each one's memory which stand out as vivid highlights. This shall always be one for me.

When I recall the early days of this Academy and realize how it has grown, I find it truely hard to believe. Back in 1945 a few men, with an idea fostered by Dr. Miller, gathered and worked into the small hours of the night, for many nights. In time, after wearying hours of discussion and debate they came up with a basic constitution, credo, and plan for the future. How these plans succeeded you all well know. Our membership is now 650, from all over the United States and many foreign countries.

To have played a part in all this from the start has been for me a wonderful experience. No editor ever started with less know-how! Galley proofs, wrong fonts, type size, and dummying were terms as foreign to me as Sanskrit. But I had to learn and did, and made many, many mistakes before the job became a little easier and the Journal a little better. Now I am told, and would like to believe, that it rates with the best of similar size and scope. I am now permitted to relax for awhile, and while I shall miss the intimate activity of officership, I shall enjoy my membership even more by being free of responsibility. This, I think, I have earned.

I should like to express my appreciation for the cooperation I have always received from the editorial staff and Board of Publications, and from the Trustees who never turned down a reasonable request made to them. To the membership at large for the many words of encouragement and helpful suggestions offered, my grateful thanks.

I am sure that Dr. Yudkoff, your new editor, will have the same support. He comes to the job with much previous experience and I know that under his guidance our publication will grow and become a leader in the realm of dental journalism.

* At the 7th Annual Meeting of the American Academy of Dental Medicine, Washington, D.C., June 28, 1953. Past President, Dr. J. Lewis Blass presented the Fellowship to Dr. Arvins on behalf of the Academy.

NEW MEMBERS ELECTED AT WASHINGTON, D.C. — JUNE 27, 1953

JACOB ABLESON
New York, New York

SAUL T. ASNIS
Brooklyn, New York

O. B. AUBIN
Detroit, Michigan

DENNIS BARKOFF
Windsor, Ont., Canada

HERBERT BRICKEN
Baltimore, Maryland

EMANUEL CHERASKIN, M.D.
Birmingham, Alabama

CHARLES M. CONAT
Detroit, Michigan

CHARLES W. G. CRAIG
Col. U.S.A.F. (D.C.)
Parks Air Force Base,
California

JEROME M. CREAN
Washington, D. C.

WILLIAM J. CURTISS
Detroit, Michigan

EDWIN W. DEER
Birmingham, Michigan

EUGENE S. DORION
Montreal, Que., Canada

NATHAN L. DUBIN
Hartford, Connecticut

JULIUS FOX
Forest Hills, New York

HAIG DER GARABEDIAN
Detroit, Michigan

DANIEL GENNES
Brooklyn, New York

IRVING GOLDSTEIN
Atlanta, Georgia

JACOB B. GOODMAN
Brooklyn, New York

MEYER H. GREEN
Detroit, Michigan

P. PHILIP GROSS
Philadelphia, Pa.

MAX HART
Flint, Michigan

HARRY E. JERROLD
Brooklyn, New York

RUBIN JOSELL
Brooklyn, New York

CHARLES G. KADISON
Baltimore, Maryland

SARAH KAPLAN
Philadelphia, Pa.

CARYL KULSAVAGE
Pontiac, Michigan

JAMES LADD
Pontiac, Michigan

JACQUES M. LEVENTHAL
Bronx, New York

ROBERT D. LEVIN
Bridgeport, Conn.

CLAYTON J. MARCEREAU
Detroit, Michigan

SIDNEY J. MARGOLIS
Bloomfield, New Jersey

JACOB P. MORRISON
Philadelphia, Pa.

WALTER W. NIEMANN
Ann Arbor, Michigan

SHERWOOD R. O'KUHN
Passaic, New Jersey

JOHN J. O'LOUGHLIN
F.P.O., New York

JACK C. PENTICUFF
Kansas City, Missouri

LOUIS PERLMAN
Windsor, Ont., Canada

LEON J. PINSKER
Merion, Pennsylvania

ALFRED RAPHAEL
F.P.O., New York

LOUIS J. RAPHAEL
Brooklyn, New York

MYRON REICHEL
Baltimore, Maryland

JULIUS ROBBINS
Philadelphia, Pa.

JAMES R. ROBINSON
Toledo, Ohio

MORTON ROSENBLUTH
New York, New York

MARIE SALUTSKY
Detroit, Michigan

P. GEORGE SAVITZ
Philadelphia, Pa.

ALFRED L. SFERRA
Bound Brook, New Jersey

MILTON SIEGAL
Albany, New York

WALTER SOLTANOFF
Bloomfield, New Jersey

EDWARD L. UDIS
Philadelphia, Pa.

CLARENCE N. VYN
Detroit, Michigan

JOHN M. WAKEVAINEN
Birmingham, Michigan

S. JOSEPH WALLSHEIN
Brooklyn, New York

DARYL BRUCE WARD
Montreal, Que., Canada

GEORGE J. WHINSTON
New York, New York

JESSE DAVID WILEN
Brooklyn, New York

HONORARY MEMBERS ELECTED JUNE 27, 1953

DR. HAROLD KEITH BOX
Toronto, Canada

DR. ELMER V. MCCOLLUM
Baltimore, Maryland

ERNESTINE B. MCCOLLUM
Baltimore, Maryland

Announcements

POSTGRADUATE TRAINING IN PERIODONTIA AND ORAL MEDICINE NEW YORK UNIVERSITY COLLEGE OF DENTISTRY

The Periodontia Department of New York University College of Dentistry which has been giving postgraduate courses in this subject since 1926, announces its full time course in Periodontia and Oral Medicine for one academic year, September 20, 1954 to May 26, 1955, leading to a certificate. Half-time two year courses are also given.

A three weeks full time course starting June 7th, 1954 is given; also a ten session (one evening weekly) introductory course begins October 7th, 1953 and February 24th, 1954. All courses are under the direct supervision of Dr. Samuel Charles Miller.

For information concerning the above or courses in other phases of dentistry write to Secretary, Postgraduate Division, New York University College of Dentistry, 209 East 23rd Street, New York 10, N. Y.

29th ANNUAL GREATER NEW YORK DENTAL MEETING

A new and unusual method of presenting table clinics in color, employing a projection method comfortably visible to all, which provides clarity and detail hitherto lacking in such presentations, will be featured on opening day of the 29th annual Greater New York Dental Meeting to be held at Hotel Statler, New York, December 7 to 11, according to announcement by Dr. Arthur E. Corby, General Chairman. The Monday Projection Clinic hours will extend from 10:00-12:00 A.M. and 2:00-4:00 P.M. sharp.

These sessions, Dr. Corby reported, will offer twenty-four well-known clinicians from the Metropolitan area in discussions of problems commonly encountered in routine practice.

Another feature expected to lend new interest to the television sessions which in the past two years have highlighted the meeting is the use of giant screen ($4\frac{1}{2}' \times 6'$) projection in color, which will enable thousands to view the material more conveniently than was possible before. In this portion of the program, to be presented on Thursday evening and all day Friday, ten of New York's outstanding practitioners will explain and demonstrate in detail on patients many phases of dentistry of interest to every practitioner.

On Tuesday, Wednesday and Thursday forty-two clinicians of prominence from cities throughout the United States, as well as clinicians from Canada and Paris, France, will present Registered Clinics on a variety of dental subjects.

On Tuesday afternoon an unusual symposium of great importance to all will be offered on the subject of "Cigarettes." Four scientists from the medical profession will present the results of extensive research on this subject.

In the evening, ten Topic Discussions will be held with two discussors for each topic and each discussor answering questions from the audience. On Thursday, two leading authorities on Mouth Rehabilitation and Hydrocolloids will be presented.

The Visual Education Program will offer forty films, while in the Exhibit Hall, 152 manufacturers will present their latest equipment and materials.

Headquarters of the Greater New York Dental Meeting are located at Room 106A, Hotel Statler, 7th Avenue at 33rd Street, New York 1, N. Y.

NEW YORK UNIVERSITY COLLEGE OF DENTISTRY POSTGRADUATE COURSES — FALL 1953

Course	*Dates*	*Day*	*Hour*
Periodontia	10/ 7/53—12/ 9/53	Wed.	7-9
Complete Dentures	10/ 2/53—12/11/53	Friday	1-7
Pathology	10/ 9/53—12/18/53	Friday	1-4
Airbrasive	10/12/53—10/17/53	one week	
Anatomy	10/14/53—12/ 2/53	Wed.	7:30-10
Oral Surgery	10/14/53—12/ 2/53	Wed.	11-12:30
Roentgenology	10/15/53—11/12/53	Thurs.	4-6
Operative Dentistry	10/16/53— 2/12/54	Friday	4-7

For further information or application write to:

MISS CATHERINE IOZZO, *Secretary*
Postgraduate Division
New York University College of Dentistry
209 East 23rd Street, New York 10, New York

OHIO STATE OFFERS POSTGRADUATE COURSES

The College of Dentistry, The Ohio State University, will present the following postgraduate courses in dentistry during the Autumn Quarter, 1953:

October 12-16—Periodontics.....Dr. John R. Wilson
October 19-23—Dental Materials.....Professor R. W. Phillips
October 26-30—General Anesthesia.....Dr. Morgan L. Allison
October 26-30—Partial Denture Prosthesis.....Dr. Victor L. Steffel
November 2-6—Full Denture Prosthesis.....Dr. Carl O. Boucher
November 2-6—Oral Surgery.....Dr. Morgan L. Allison
November 16-20—Clinical Oral Pathology and Diagnosis..Dr. Hamilton B. G. Robinson
November 16, 17, 18—Basic Cephalometrics.....Orthodontic Staff

Each course is given for five consecutive days, Monday through Friday, and the enrollment is limited to approximately ten in each class. Further information and application may be secured from the Postgraduate Division, College of Dentistry, Ohio State University, Columbus, 10, Ohio.

10th ANNUAL MEETING OF AMERICAN INSTITUTE OF DENTAL MEDICINE

Between three and four hundred dentists, including top dental and medical researchers, will be in attendance at the 10th Annual Meeting of the American Institute of Dental Medicine, at the Desert Inn and El Mirado, Palm Springs, California, October 25 through October 29, 1953. Applications and full information on the Seminar program may be secured by writing Miss Marion G. Lewis, Executive Secretary, 2240 Channing Way, Berkeley 4, California.

THE JOURNAL OF DENTAL MEDICINE

VOLUME 8 — NUMBERS 1-4 — PAGES 1-159

ANNUAL INDEX — 1953

AMERICAN ACADEMY OF DENTAL MEDICINE
Address by Dr. A. N. Arvins upon receiving Fellowship. 154
American Academy of Dental Medicine annual awards. 119
J. L. Blass honored. 125
Member elected June 27, 1953. 155
Members elected Dec. 7, 1952. 32
Presentation of charter to Philadelphia section. 82.
President's address. 89
Report of meeting in Trois-Rivieres, Montreal Quebec. 33
Retiring president's address. 117
Symposium on pain, report. 31

ASNIS, S. T. A guide for tongue training. 108

AUERBACH, M. B. Endodontia in diagnosis and treatment planning. 4

BELL, L. J. Do you have trouble with dentists? 105

BLASS, J. L. Chairside patient education in periodontal disease. 136. The therapeutics of pain control. 55

BLECHMAN, H. Practical approach to chemotherapy in endodontia. 19

BOOK REVIEWS
Bachman, G. W. Health Resources in the United States. 37
Bauer, J. C. et. al. Dentistry for Children. 37
Daley, R. and H Miller. Progress in Clinical Medicine. 115
Davis, R. W. Health Saboteurs. 152
Glickman, I. Clinical Periodontology. 115
Hansel, F. K. Clinical Allergy. 116
Hughes, J. G. Pediatrics in General Practice. 116
Krieg, W. J. S. Functional Neuroanatomy. 151
Landa, J. S. Dynamics of Psychosomatic Dentistry 151
Maxcy, K. F. Preventive Medicine and Hygiene. 37
The Merck Index of Chemicals and Drugs. 37
Schlosser, R. O. Complete Denture Prosthesis. 115
Sedler, W. S. Practice of Psychiatry. 116
Watson, C. J. Outline of Internal Medicine. 115

BRICKEN, H. The effect of mental stress on the pH of the saliva. 96

BURMAN, L. R. A device for testing the sharpness of instruments. 73. (Reviewed by) Clinical Periodontology, I. Glickman. 115. Complete Denture Prosthesis, R. O. Schlosser. 115. Dynamics of Psychosomatic Dentistry, J. S. Landa. 151.

CANCER
Dufresne, O. Cancer of the oral cavity. 27
Lyall, D. The treatment of cancer of the oral cavity. 60

DIAGNOSIS
Auerbach, M. B. Endodontia in diagnosis and treatment plan. 4

DUFRESNE, O. Cancer of the oral cavity. 27

ENDODONTIA
Auerbach, M. B. Endodontia in diagnosis and treatment plan. 4
Blechman, H. Practical approach to chemotherapy in endodontia. 19
MacSween, S. A. Basic requirements in endodontia. 12
Tremblay, V. Surgical intervention in endodontia. 17
Zimmerman, G. Endodontia procedures. 14

EQUILIBRATION
Malsky, M. Occlusal impact, its relation to preliminary grinding. 24
Sorrin, S. Occlusal Equilibration—Quo Vadis. 129

FACE
Savitsky, N. Unusual causes for pain in the face. 49

INSTRUMENTS
Burman, L. R. A device for testing the sharpness of instruments. 73

KUGELMASS, I. N. (Reviewed by) Clinical Allergy, F. K. Hansel. 116. Functional Neuroanatomy, W. J. S. Kreig. 151. Health Resources in the United States, G. W. Bachman. 37. Outline of Internal Medicine, C. J. Watson. 115. Pediatrics in General Practice, J. H. Hughes. 116. Practice of Psychiatry, W. S. Sedler 116. Preventive Medicine and Hygiene, K. F. Maxcy. 37. Progress in Clinical Medicine, R. Daley and H. Miller. 115. The Merck Index of Chemicals and Drugs. 37

LYALL, D. The treatment of cancer of the oral cavity. 60

McCOLLUM, E. V. History of nutrition. 141

MACSWEEN, S. A. Basic requirements in endodontia. 12

MALSKY, M. Occlusal impact, its relation to preliminary grinding. 24

MILLER, S. C. Practical prescription procedures in vitamin therapy. 90. The practical solution to the prevention and cure of temporomandibular joint disturbances. 43

NECROLOGY
Kalin, Jerome, December 23, 1952. 82
Malsky, Maurice, April 14, 1953. 125

NUTRITION
McCollum, E. V. History of nutrition. 141
Miller, S. C., Roth, H., Simring, M. Practical prescription procedures in vitamin therapy. 90
Roth, H. Nutrition and Oral Conditions. Special Issue, (Sept. 1953)

ORAL CAVITY
Lyall, D. The treatment of cancer of the oral cavity. 60

ORAL MUCOSA
Stone, A. The keratinization of the human oral mucosa in the aged male. 69

PAIN
Blass, J. L. The therapeutics of pain control. 5
Savitsky, N. Unusual causes for pain in the face. 49

PERIODONTAL DISEASE
Blass, J. L. Chairside patient education in periodontal disease. 136

ROTH H. (Reviewed by) Dentistry for Children. J. C. Bauer, W. Demeritt, L. B. Higley, M. Massler, I. Schour. 37
Nutrition and Oral Conditions. Special Issue, (Sept. 1953)
Practical prescription procedures in vitamin therapy. 90

SALIVA
Bricken, H. The effect of mental stress on the pH of the saliva. 96

SAVITSKY, N. Unusual causes for pain in the face. 49

SIMRING, M. Practical prescription procedures in vitamin therapy. 90

SORRIN, S. Occlusal Equilibration—Quo Vadis. 129

STONE, A. The keratinization of the human oral mucosa in the aged male. 69

TEMPOROMANDIBULAR JOINT
Miller, S. C. The practical solution to the prevention and cure of temporomandibular joint disturbances. 43

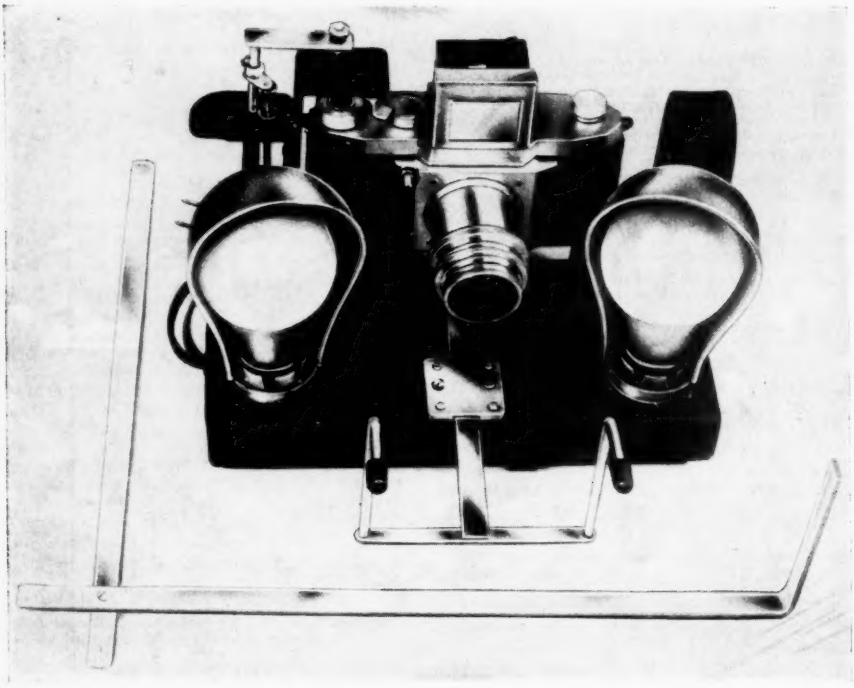
TONGUE
Asnis, S. A guide for tongue training. 108

TREMBLAY, V. Surgical intervention in endodontia. 17

ZIMMERMAN, G. Endodontia procedures. 14

THE ATCO LIGHT UNIT

A Modern Development In Clinical Photography



YOU AIM AND SHOOT . . . IT'S AS SIMPLE AS THAT
ACCURACY . . . SIMPLICITY . . . VERSATILITY
FOCUSSING IS AUTOMATIC . . . LIGHTING AND EXPOSURE STANDARDIZED

The ATCO LIGHT UNIT is especially designed for technical photography. It is particularly useful in the office, laboratory, hospital and clinic, where accurate and quick photographic records are required.

The unit is equipped with special measuring guides for focussing and centering the image, this is an important feature because it enables the operator to make before and after photographs from the same angle and of the same dimensions for comparison.

YOUR CAMERA CAN BE ADAPTED TO THE ATCO LIGHT UNIT AND EASILY REMOVED FOR GENERAL PHOTOGRAPHY

ATCO SCIENTIFIC PHOTOGRAPHIC LABORATORY
200 East 23rd Street, New York 10, N. Y.
LExington 2-1387 - 3466